



# Rocky Flats Environmental Technology Site

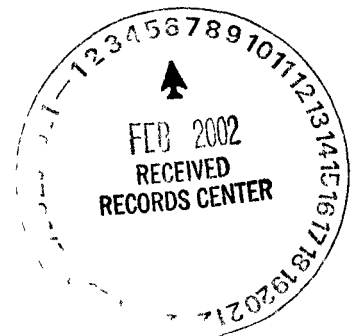
## RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

**BUILDINGS 562, 563 AND 564**

**559 CLUSTER CLOSURE PROJECT**

**REVISION 0**

**November 14, 2001**



**"REVIEWED FOR CLASSIFICATION/UCNP"**

BY STREIGHT - y/m

DATE 12/03/01

**ADMIN RECORD**

**B559-A-000011**

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## RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

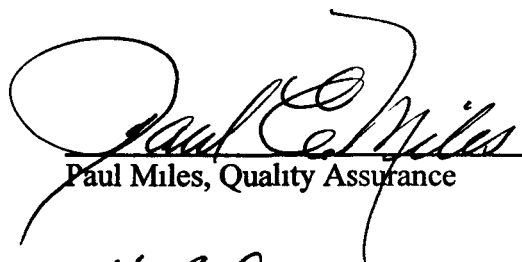
**BUILDINGS 562, 563 AND 564**

**559CLUSTER CLOSURE PROJECT**

**REVISION 0**


**November 14, 2001**

**Reviewed by:**

  
Paul Miles, Quality Assurance

Date 11/27/01

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Date 11/30/01

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Date 12/5/01

## ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
DCGL <sub>EMC</sub>	Derived Concentration Guideline Level – elevated measurement comparison
DCGL <sub>w</sub>	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U S Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U S Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

## TABLE OF CONTENTS

<b>ABBREVIATIONS/ACRONYMS .....</b>	<b>IV</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>V</b>
<b>1 INTRODUCTION.....</b>	<b>1</b>
1 1 PURPOSE	1
1 2 SCOPE	1
1 3 DATA QUALITY OBJECTIVES	1
<b>2 HISTORICAL SITE ASSESSMENT .....</b>	<b>2</b>
<b>3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS</b>	<b>2</b>
3 1 RADIOLOGICAL CHARACTERIZATION	2
3 2 RADIOLOGICAL HAZARDS SUMMARY	2
<b>4 CHEMICAL CHARACTERIZATION AND HAZARDS</b>	<b>3</b>
4 1 CHEMICAL CHARACTERIZATION	3
4 1 1 Asbestos	3
4 1 2 Beryllium (Be)	3
4 1 3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]	4
4 1 4 Polychlorinated Biphenyls (PCBs)	4
4 2 CHEMICAL HAZARDS SUMMARY	4
4 2 1 Asbestos	4
4 2 2 Beryllium	5
4 2 3 RCRA/CERCLA Constituents	5
4 2 4 PCBs	6
<b>5 PHYSICAL HAZARDS.....</b>	<b>6</b>
<b>6 DATA QUALITY ASSESSMENT .....</b>	<b>6</b>
<b>7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES</b>	<b>6</b>
<b>8 FACILITY CLASSIFICATION AND CONCLUSIONS</b>	<b>7</b>
<b>9 REFERENCES.....</b>	<b>8</b>

## ATTACHMENTS

- A Facility Location Map
- B Historical Site Assessment Reports
- C Radiological Characterization Packages
- D Chemical Characterization Packages
- E Radiological Data Summaries and Survey Maps
- F Chemical Data Summaries and Sample Maps
- G Decommissioning Waste Types And Volume Estimates
- H Data Quality Assessment (DQA) Detail

4

## EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (6/21/99) and compliant disposition and waste management of Buildings 562, 563 and 564. Because these facilities were anticipated to be Type 1 facilities, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). All facility surfaces were characterized in this RLC, including the interior and exterior surfaces (i.e., floors (slabs), walls, ceilings and roofs), except those on B563. Only accessible, exterior surfaces of B563 were characterized in this RLC. Due to the inaccessibility of the interior surfaces of B563, additional radiological measurements will be obtained during the demolition phase using the Waste Release Evaluation process. Environmental media beneath and surrounding the facilities were not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

The RLC encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report.

Results indicate that no radiological contamination exists in excess of the PDSP prescribed release limits of DOE Order 5400.5. Some asbestos containing materials were identified in B562 (friable and non-friable) and 563 (friable). Fluorescent light ballasts may contain PCBs. Any PCB ballasts and asbestos containing materials will be removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Painted surfaces of B562 shall be considered PCB Bulk Product Waste. All demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. All concrete associated with these facilities meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete.

Based upon this RLCR and subject to concurrence by the CDPHE, Buildings 562, 563 and 564 are considered to be Type 1 facilities. To ensure that the facilities remain free of contamination and that RLC data remain valid, isolation controls have been established, and the facilities have been posted accordingly.

## **1 INTRODUCTION**

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Buildings 562, 563 and 564. Because these facilities were anticipated to be Type 1 facilities, a PDS characterization was performed. All facility surfaces were characterized in this RLC, including the interior and exterior surfaces of the facilities (i.e., floors (slabs), walls, ceilings and roofs), except those on B563. Only accessible, exterior surfaces of B563 were characterized. Environmental media beneath and surrounding the facilities were not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these are Buildings 562, 563 and 564. The locations of these facilities are shown in Attachment A. These facilities no longer support the RFETS mission and need to be removed to reduce Site infrastructure, risks and/or operating costs.

Before the facilities can be removed, a Pre-Demolition Survey (PDS) must be conducted, this document presents the PDS results. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Reports.

### **1.1 Purpose**

The purpose of this report is to communicate and document the results of the RLC effort. PDSs are performed before building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

### **1.2 Scope**

This report presents the final radiological and chemical conditions of Buildings 562, 563 and 564. Due to the inaccessibility of the interior surfaces of B563, additional radiological measurements will be obtained during the demolition phase using the Waste Release Evaluation process. Environmental media beneath and surrounding the facilities are not within the scope of this RLCR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

### **1.3 Data Quality Objectives**

The Data Quality Objectives (DQOs) used in designing this RLC were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

6

## **2 HISTORICAL SITE ASSESSMENT**

Facility-specific Historical Site Assessments (HSAs) were conducted to understand facility histories and related hazards. The assessments consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP). Results were used to identify data gaps and needs, and to develop radiological and chemical characterization packages. Results of the facility-specific HSAs were documented in a facility-specific Historical Site Assessment Report (HSAR). Refer to Attachment B, Historical Site Assessment Report, for a copy of the B559 Cluster HSAR. In summary, the HSAR identified no potential for radiological and chemical hazards, except the potential for asbestos containing materials and PCBs in paint and light ballasts.

## **3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS**

Buildings 562, 563 and 564 were characterized for radiological hazards per the PDSP. Section 3.1 describes the radiological characterization process that was performed, and Section 3.2 summarizes the radiological hazards that were identified, if any.

### **3.1 Radiological Characterization**

Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the accessible surfaces of B562, B563 and B564. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to Attachment C). Due to the inaccessibility of the interior surfaces of B563 (i.e., operational cooling tower), 15 additional biased TSA and smear measurements will be obtained during the demolition phase using the Waste Release Evaluation process.

Three radiological survey packages were developed: 562-A-001 for the interior and exterior of B562, 563-A-002 for the exterior of B563, and 564-A-001 for the interior and exterior of B564. The three survey packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02, *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*.

### **3.2 Radiological Hazards Summary**

Radiological survey data, statistical analysis results, and survey locations are presented in Attachment E, Radiological Data Summary and Survey Maps. The radiological survey unit packages (i.e., 562-A-001, 563-A-001, and 564-A-001) are maintained in the RISS Characterization Project files.

A total of 75 TSA measurements, 75 RSA measurements, and 5% scan surveys were performed on the three facilities (i.e., B562, B563 and B564). None of these initial measurements indicated elevated activity above the appropriate DCGL<sub>w</sub> values. Therefore, the PDS confirmed that B562, B563 and B564 do not contain radiological contamination above the surface contamination guidelines provided in the RFETS Pre-Demolition Survey Plan for D&D Facilities. Due to the inaccessibility of the interior surfaces of B563, 15 additional biased TSA and smear measurements will be obtained during the demolition phase using the Waste Release Evaluation process. Isolation control postings are displayed on affected structures to ensure no radioactive materials are introduced.

#### **4 CHEMICAL CHARACTERIZATION AND HAZARDS**

Buildings 562, 563 and 564 were characterized for chemical hazards per the PDSP. Section 4.1 describes the chemical characterization process that was performed, and Section 4.2 summarizes the chemical hazards that were identified.

##### **4.1 Chemical Characterization**

Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in Buildings 562, 563 and 564. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. Chemical Characterization Packages (refer to Attachment D) were developed during the planning phases that describes sampling requirements and the justification for the sample locations and estimated sample numbers. Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, and PCBs. Refer to Attachment F, Chemical Summary Data and Sample Maps, for details on sample results and sample locations.

###### **4.1.1 Asbestos**

Based on limited historical asbestos inspection data, an asbestos inspection and sampling of suspect asbestos containing material (ACM) were required for the RLC. A CDPHE-certified asbestos inspector conducted the inspection and sampling in accordance with PRO-563-ACPR, *Asbestos Characterization Protocol*, Revision 1. Potential ACM was identified for sampling at the discretion of the inspector.

###### **4.1.2 Beryllium (Be)**

Based on the HSAR and interviews, there was no record of beryllium operations or storage in Buildings 562 and 564. However, there was not adequate information to conclude the absence of beryllium, and therefore, limited biased sampling was performed in each of these facilities. There is adequate historical and process knowledge to conclude that beryllium was not used or stored in the B563 cooling tower. Therefore, no random and/or biased samples were required in B563.

8



#### **4.1.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]**

Based on the HSAR, interviews and facility walkdowns of Buildings 562, 563 and 564, there was no record of RCRA/CERCLA constituent operations, storage or spills, and therefore, RCRA/CERCLA constituent sampling was not performed in these facilities

Sampling for lead in paint in Buildings 562, 563 and 564 was not performed. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal

#### **4.1.4 Polychlorinated Biphenyls (PCBs)**

Based on the HSARs, interviews and facility walkdowns of Buildings 562, 563 and 564, no PCB-containing equipment were present in any of the buildings, and therefore, there is no potential for PCB contamination resulting from spills. Therefore PCB sampling was not performed in these facilities. B562 and B564 may contain fluorescent light ballasts that may contain PCBs. Therefore, fluorescent light fixtures will be inspected to identify PCB ballasts during removal operations. PCB ballasts will be identified based on factors such as labeling (e.g., PCB-containing and non-PCB-containing), manufacturer, and date of manufacturing. All ballasts that do not indicate non-PCB-containing are assumed to be PCB-containing. Based on the age of B562 (constructed in 1973), PCB's are assumed to be in the structure paint. B563 and B564 were built in 1983 and therefore, would not contain PCBs in the structure paint. B563 and B564 can be disposed of as sanitary waste. Painted surfaces of B562 shall be considered PCB Bulk Product Waste.

Environmental Waste Compliance Guidance #25, *Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition*, states that applied dried paints, varnishes, waxes, or other similar coatings or sealants are acceptable for disposal (with notification) in a non-hazardous solid waste landfill as PCB Bulk Product Waste under 40 CFR 761.3 and 40 CFR 761.62 paragraph (b), and therefore, need not be sampled as long as restrictions outlined in 40 CFR 761.62 regarding their disposition are met.

### **4.2 Chemical Hazards Summary**

The following sections summarize the chemical hazards identified during the PDS

#### **4.2.1 Asbestos**

Some ACM was present in Buildings 562 (friable and non-friable) and 563 (friable). Building 564 did not have any ACM. Asbestos sample data and sample location maps are contained in Attachment F, Chemical Summary Data and Sample Maps.

### **Building 562**

Building 562 had several different suspect asbestos containing materials, including a variety of thermal system insulation on fire lines, domestic water lines, and the generator exhaust system lines, a micaeous surfacing material at the wall and ceiling interface, potential skim coat painted cinder block surfaces, gray door frame caulking, and black tar roofing material. Analytical results of the bulk samples indicate that the TSI on the generator exhaust lines contains 10% chrysotile, and in one sample, 10% amosite. The micaeous surface material at the wall ceiling interface contains 10% chrysotile. The black tar roofing material also contains 18% chrysotile. All other suspect materials were either non detected or below 1% ACM as indicated by point count analysis.

### **Buildings 563**

Building 563 contained water lines with suspect thermal system insulation (TSI). Analytical results of bulk samples indicate that the 4 inch TSI line located at the southeast corner of the cooling tower contains 15% chrysotile. Based on the visual inspection, all other water lines and associated equipment seem to contain fiberglass insulation, however, if during demolition any additional suspect materials are discovered, they will be treated as ACM unless proved otherwise by a certified CDPHE asbestos inspector.

### **Building 564**

Building 564 had several suspect asbestos containing materials, including drywall/joint compound, two varieties of white-fissured ceiling tiles, white with green-fissured floor tiles and black mastic, brown cover base/mastic, and gray window caulking. Analytical results of the bulk samples indicate that no asbestos was detected in any of these building materials.

#### **4.2.2 Beryllium**

Beryllium sample results for Buildings 562, 563 and 564 were all less than 0.1  $\mu\text{g}/100\text{cm}^2$ . Beryllium sample data and sample location maps are contained in Attachment F, Chemical Summary Data and Sample Maps.

#### **4.2.3 RCRA/CERCLA Constituents**

Based on the HSAR, interviews and facility walkdowns of Buildings 562, 563 and 564, there was no record of RCRA/CERCLA constituent operations, storage or spills. Therefore, there are no RCRA/CERCLA constituent hazards in these facilities.

#### 4.2.4 PCBs

Based on the HSAR, interviews and facility walkdowns of Buildings 562, 563 and 564, there are no hazards associated with any historical PCB spills/releases. PCB ballasts may be found in the B562 and B564, and will be removed and disposed of in accordance with site procedures prior to building demolition. Based on the age of B562 (constructed in 1973), PCB's are assumed to be in the structure paint. B563 and B564 were built in 1983 and therefore, would not contain PCBs in the structure paint. B563 and B564 can be disposed of as sanitary waste. Painted surfaces of B562 shall be considered PCB Bulk Product Waste.

### 5 PHYSICAL HAZARDS

Physical hazards associated with Buildings 562, 563 and 564 consist of those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. There are no unique hazards associated with the facilities. The facilities have been relatively well maintained and are in good physical condition, and therefore, do not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

### 6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Buildings 562, 563 and 564, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments A – G) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- ◆ the *number* of samples and surveys,
- ◆ the *types* of samples and surveys,
- ◆ the sampling/survey process as implemented "in the field", and,
- ◆ the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment H.

### 7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Buildings 562, 563 and 564 will generate a variety of wastes. Attachment G presents the estimated waste types and waste volumes by facility. All wastes can be disposed of as sanitary waste, except asbestos containing material and PCB Bulk Product Waste. There is no radioactive or hazardous waste. Asbestos and PCB ballasts will be managed pursuant to Site asbestos and PCB abatement and waste management procedures.

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## **8 FACILITY CLASSIFICATION AND CONCLUSIONS**

Based on the analysis of radiological, chemical and physical hazards, Buildings 562, 563 and 564 are classified as RFCA Type 1 facilities pursuant to the RFETS

Decommissioning Program Plan (DPP, K-H, 1999) The Type 1 classification is based on a review of historical and process knowledge, and newly acquired RLC data, and will be subject to concurrence by the Colorado Department of Public Health and the Environment (CDPHE)

The RLC of Buildings 562, 563 and 564 was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria These facilities do not contain radiological or hazardous wastes PCB ballasts and asbestos containing material will be removed and disposed of in compliance with EPA and CDPHE regulations Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA All concrete associated with these facilities meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete

To ensure that the Type 1 facilities remain free of contamination and that RLC data remain valid, isolation controls have been established, and the facilities are posted accordingly

## 9 REFERENCES








- DOE/RFPO, CDPHE, EPA, 1996 Rocky Flats Cleanup Agreement (RFCA), July 19, 1996
- DOE Order 5400 5, "Radiation Protection of the Public and the Environment "
- DOE Order 414 1A, "Quality Assurance "
- EPA, 1994 "The Data Quality Objective Process," EPA QA/G-4
- K-H, 1999 Decommissioning Program Plan, June 21, 1999
- MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev 0, November 15, 2000
- MAN-076-FDPM, *Facility Disposition Program Manual*, Rev 1, September 1999
- MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev 3, April 23, 2001
- MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev 0, April 23, 2001
- MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual, December 1997 (NUREG-1575, EPA 402-R-97-016)
- PRO-475-RSP-16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001
- PRO-476-RSP-16 02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev 1, May 22, 2001
- PRO-477-RSP-16 03, *Radiological Samples of Building Media*, Rev 1, May 22, 2001
- PRO-478-RSP-16 04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev 1, May 22, 2001
- PRO-479-RSP-16 05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev 1, May 22, 2001
- PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999
- PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999
- RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition
- RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal
- RFCA Standard Operation Protocol for Recycling Concrete, September 28, 1999
- RFETS, Historical Site Assessment for the B559 Cluster, September 2001

# ATTACHMENT A

## Facility Location Map

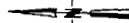
# Building Cluster 562, 563, 564

## Standard Map Features

-  Buildings and other structures
-  Solar Evaporation Ponds (SEPs)
-  Lakes and ponds
-  Streams ditches or other drainage features
-  Fences and other barriers
-  Paved roads
-  Dirt roads

## DATA SOURCE BASE FEATURES

Buildings fences hydrography roads and other structures from 1994 aerial fly-over data captured by EC&G RSL Las Vegas  
Digitized from the orthophotographs 1995



Scale = 1:12450  
1 inch represents approximately 1038 feet  
State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD83

U S Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by

**DynCorp**  
THE ART OF TECHNOLOGY

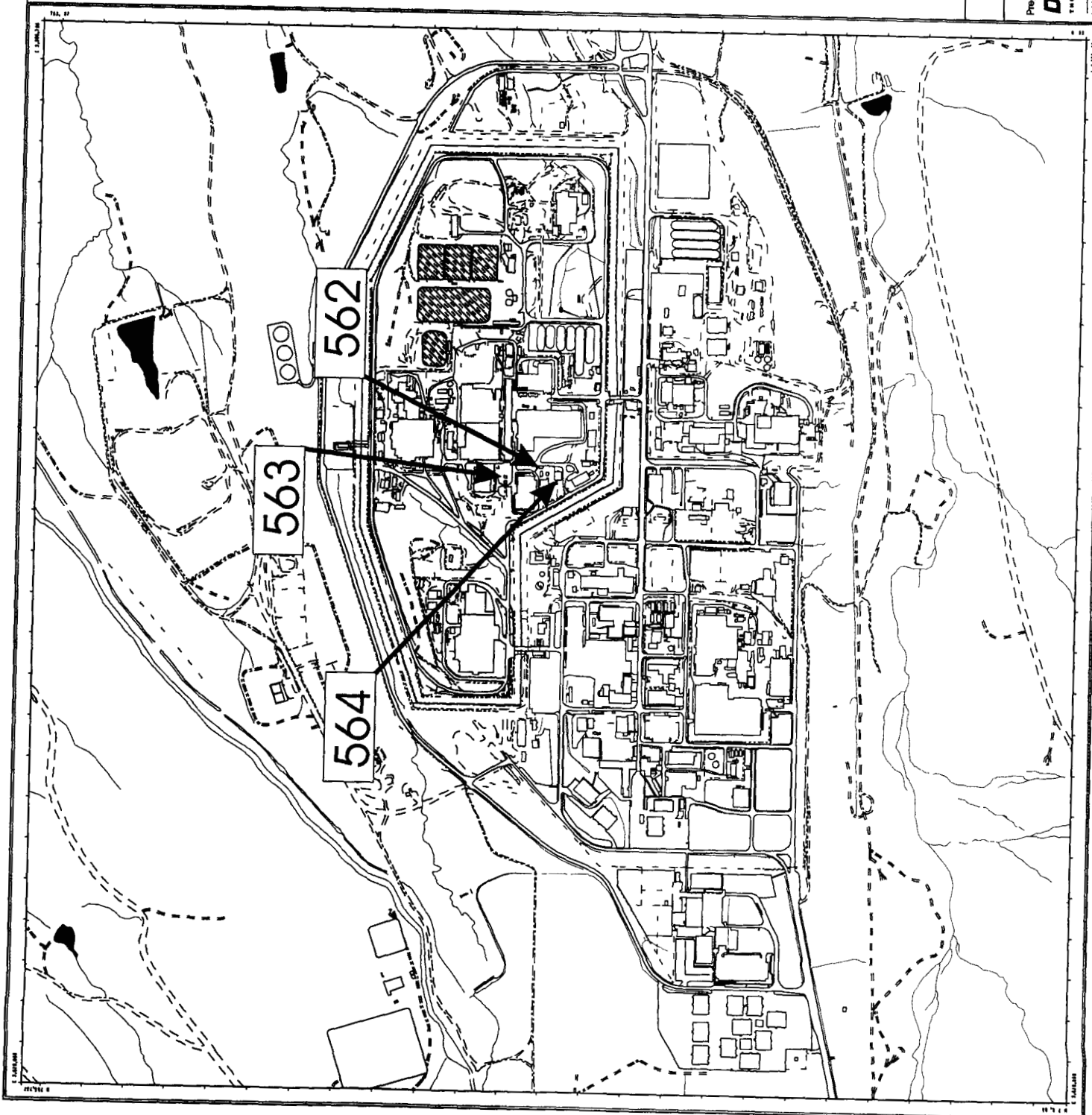
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MAP ID: FY 2002

October 19, 2001

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## ATTACHMENT B

# Historical Site Assessment Report



**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

**Facility ID** Buildings 559, 564, 563, 562, 561, 559A, 528, The Utility Tunnel Between Building 559 and 561, TK-14, TK-15, Tank 130, Tank 131, Tank 0128, and Tank 0129

**Anticipated Facility Type (1, 2, or 3)** Buildings 559, 561, 528, and The Tunnel anticipated Type 2 facilities Building 564, 563, 562, 559A, TK-14, TK-15, Tank 130, Tank 131, Tank 0128, and Tank 0129 are anticipated Type 1 facilities

This facility-specific Historical Site Assessment (HSA) has been performed in accordance with  
*D&D Characterization Protocol*, RFETS MAN-077-DDCP, latest version, and  
*Facility Disposition Program Manual*, RFETS MAN-076-FDPM, latest version

**Physical Description**

**Building 559**

Building 559 is the main structure in the Building 559 Cluster and was constructed in 1967. The building is a single-story building with 32,500 square feet of floor space and is approximately 240-feet long by 120-feet wide. In 1969 an annex to Room 103 and a dock was added. In 1972 an addition was added that included the women's locker rooms, and a lunchroom. In 1986, to meet new wind resistance criteria, the building installed a system of steel panels and girts, which span the existing support columns on all sides of the building.

Building 559 has three main laboratory room (Rooms 101, 102, and 103), a men's and a women's locker rooms, two mechanical rooms, a generator room, a HVAC control room, a lunchroom, several offices, and two docks. There is a ventilation air tunnel, which runs east and west under the floor slab of the three main laboratories room in the building. The ventilation air tunnel is 192-feet long by 8-feet high by 12-feet wide, and is used for re-circulating room air in the laboratories.

The building has poured-in-place reinforced concrete footings, which extend to a depth of 5-feet below grade. The structural framing of the building consists of poured-in-place reinforced concrete columns. The exterior walls are concrete blocks between the concrete framing columns and are painted. The floor is a 6-inch-thick, reinforced concrete slab poured on grade. The roof is constructed of 2-inch-thick, pre-cast reinforced concrete slabs, which are resting on vertical structural concrete columns. The roof has a 3-1/2 inch layer of insulation under the built-up roofing. New built-up roofing was installed in 1998. The roof has gutters and downspouts on the north and south sides of the building.

The interior walls are constructed of cinder block. Ceramic tiles cover the cinder blocks in the locker rooms and restroom areas. The office space and lunchroom ceilings are 2-foot by 2-foot suspended acoustical tile. The ceiling in the remainder of the facility is the underside of the concrete roof panels. The only windows in Building 559 are in the lunchroom. The interior walls and ceilings throughout the facility are painted. The floors in the offices and lunchroom are tiled. Most of the offices have 8-inch floor tiles, however, some offices and the lunchroom have 12-inch floor tiles. The floors in the laboratories and the mechanical rooms are painted concrete. Room 106 is the old computer room and still has the raised flooring.

Building 559 has an underground tunnel leading to Building 561. This tunnel is a utility tunnel, which houses the ventilation ducting for the multiple zones of ventilation in Building 559. Prior to the construction of the Building 561 filter plenum facility the original air plenums were located in room 129 (in Building 559).

Fire protection is provided by a sprinkler system and wall-mounted fire extinguishers. Building 559 is connected to the plants fire alarm system LSDW system, water, sanitary, electrical, gas and plant steam for heat. This building is also connected to the process waste system through Building 528. Cooling water is provided by the Building 563 cooling tower.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

**Building 564**

Building 564 is a single-story, pre-fabricated, office building, constructed in 1983. This building has 3000 square feet of floor space and measures approximately 50-feet wide by 60-feet long by 12-feet high. The structure has an entrance on the west side of the building and an entrance on the east side of the building. The building has corrugated metal siding on a steel frame, and was built on a 6-inch-thick, poured-on-grade, concrete slab. The roof was constructed of corrugated steel on a steel frame with no gutters. The insulation was not accessible for inspection.

The interior has a men's restroom, a woman's restroom, 3 hard-walled offices on the south side of the building, and a main work area in the center of the building that is divided into cubical offices. The walls are constructed of painted wallboard. The ceiling is a 2-foot by 3-foot acoustical drop ceiling with recessed fluorescent lights. The floors are carpeted in the office areas and have 12-inch by 12-inch tiles in the restrooms.

The building is hooked up to plant power, water and sanitary. The building has natural gas heat and electrical air conditioning. Fire protection is provided by wall-mounted fire extinguishers and a fire alarm system, but has no overhead sprinkler system. This building is attached to the LSDW system.

**Building 561**

Building 561 is the filter plenum for Building 559 and was constructed in 1973. This building is a one-story building, with 5700 square feet of floor space and measures 61-feet wide by 93-feet long by 18-feet high. A pit in the northeast corner of the building measures 22-feet long by 22-feet wide by 16-feet deep and provides access to the Building 559 utility tunnel, which houses the ventilation ducts from Building 559. The pit also houses the 5000-gallon firewater deluge tank. Building 561 contains four separate filter plenums, three of the plenum filter exhausts air from Building 559 and the fourth plenum filters supply air from Building 561. Additional information about the ventilation system's operations can be found in the Building 561 Historical Operations section.

The building has reinforced concrete footings, which extend to a depth of 5-feet below grade. The structural framing of the building consists of reinforced concrete columns. The exterior walls are concrete blocks between the concrete framing columns. The floor is a 7-inch-thick reinforced concrete slab poured over 2-inch-thick insulation, built on grade. The roof is constructed of 2-inch-thick, pre-cast reinforced concrete slabs, which are resting on vertical structural concrete columns. The roof has a 2-inch layer of insulation covered with built-up roofing. The roof is slanted for drainage and has no gutters. There is a main entrance on the east side and another on the north side of the building. The exterior walls, interior walls, and floors are painted.

Fire protection is provided by a sprinkler system and wall-mounted fire extinguishers. Building 561 is connected to the plant's fire alarm system, water, electrical, steam for heat and waste process system. The building is not connected to the cooling water system or the LSDW system.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

**Building 562**

Building 562 is the standby diesel generator building and was built in 1973. This structure is 16-feet wide by 24-feet long and 12-feet high. The foundation is a poured-in-place, reinforced concrete wall, which extends 5-feet below grade. The walls are constructed of concrete cinder block, and the roof is pre-cast, reinforced concrete panels with 2-inches of insulation under built-up roofing. The floor is a 6-inch-thick, reinforced concrete slab. The building has an entrance door on the south side and a double door on the east side of the building.

To the north of the building is a vertical radiator for cooling the diesel generator. This radiator is horizontally mounted on a 5-foot by 6-foot long by 4-foot high steel frame. There is also a 2-foot wide by 5-foot long by 7-foot high metal shed mounted to the side of the building. This shed stored CO2 supply tanks for the building's fire suppression system. These tanks were removed, and the CO2 fire suppression system was replaced with a water system in the mid 1990s.

Building 562 is connected to the plant electric system and plant water, which supplies the fire sprinkler system. Building 562 is not connected to the plant sanitary, process waste, LSDW or the fire alarm systems. Fire protection is provided by a sprinkler system and wall-mounted fire extinguishers. This building has a single electric heater.

**Building 563**

Building 563 is the east cooling tower and was constructed in 1983. This structure measures approximately 17-feet wide by 23-feet long by 15 feet high, and was built on a 6-inch-thick, poured-on-grade concrete slab. The slab has a 12-inch high containment wall around its perimeter, which acts as the tower spray-water catch basin. The cooling tower is constructed with a wood internal frame, plastic internal dispersion panels and corrugated fiberboard outer walls. The top of the cooling tower has a wood handrail around its perimeter. The tower also has a 12-foot-diameter fiberboard, circular exhaust port in the center of the roof. The water piping is insulated.

The cooling tower has plant water and electrical connections. The cooling tower's blowdown line is connected to the plant sanitary system. Building 563 is not connected to the process waste, fire alarm or LSDW system. Fire protection is provided by an internal sprinkler system.

**Building 559A**

Building 559A is the accountability board shelter for Building 559 and was built in 1991. The accountability board is a skid-mounted structure that measures approximately 4-feet wide by 6-feet long and 7-feet high. The accountability board is a painted wood structure with an asphalt roof. Building 559A has no windows or doors, but does have an overhang to protect the accountability board from the weather. Building 559A has no utility hook-ups.

**Building 528**

Building 528 is the waste holding facility for Building 559. Building 528 has restricted access (CA) and could not be entered during this HSA. Building 528 was constructed in the early 1970s and measures 18-feet wide by 35-feet long by 17 feet deep, with the majority of the structure below grade. The building has a single man entrance on the west side of the structure and metal stairs leading to the below-grade pit area. The original roof was constructed of pre-cast, reinforced concrete slabs covered with insulation and built-up roofing. The roof was replaced with a corrugated metal roof in 1989. The walls are 6-inch poured-in-place concrete walls, and the floor is 6-inch poured-in-place concrete floor slab.

The building holds two 2000-gallon low-level waste storage tanks (V-1 and V-2), two pumps for transferring the waste to the waste process system, and a sump along the north wall. If water collects in the sump, the water is pumped into the process waste tanks. The floor of the pit and the bottom 6-inches of the wall are sealed with a gray sealant to act as a containment system. The sump has been lined with a fiberglass coating to seal the concrete. The two tanks inside the building receive waste from Building 559 and Building 561 plenums. The tanks are inter-connected so that when one tank fills, the process waste will divert to the second tank.

Building 528 has electrical, steam for heat, and process waste connections. The building does not have water, sanitary, LSDW or fire alarm connections. Ventilation is provided by plenum FP-300 in Building 561. Fire protection is provided by wall-mounted fire extinguishers.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

TK-14 - TK - 14 is a 1000-gallon aboveground steel diesel storage tank installed in the mid 1990s to replace UST-14 (a k a Tank 130) TK-14 is operational

TK - 15 - TK - 15 is a 1000-gallon aboveground steel diesel storage tank installed in the mid 1990s to replace UST-15 (a k a Tank 131) TK-15 is operational

Tank 0129 - Tank 0129 is a 1400-gallon steel aboveground liquid argon tank located south of building 559 Tank 0129 is still operational

Tank 0128 - Tank 0128 is a 650-gallon steel aboveground liquid nitrogen tank located south of building 559 Tank 0128 is still operational

Tank 130 - Tank 130 is a 1000-gallon steel underground diesel fuel storage tank located at the north east corner of Building 559 This tank was closed and foamed in place in 1998 See section on historical operation for the name of the closure document

Tank 131 - Tank 131 is a 3000-gallon steel underground diesel fuel storage tank located east of Building 552 This tank was closed and foamed in place in 1998 See section on historical operation for the name of the closure document

#### **Historical Operations**

##### **Building 559**

Building 559 is referred to as the plutonium laboratory because it supported the plutonium production operations The facility analyzed samples related to production, environmental monitoring and waste characterization These sample were from the plutonium production facilities, as well as the general plant Analyses were commonly performed on metals, gases, aqueous solutions, waste salts, solvents and sludges Each laboratory is equipped with numerous gloveboxes and hoods to facilitate safe handling of the radioactive samples, as well as benches and chemical hoods for the handling of non-radioactive samples

The laboratories were generally segregated into organic and inorganic analysis The organic laboratories occupied Room 101 and Room 103 The analyses performed in the organic laboratories involve the identification and quantitative determination of both radioactive and non-radioactive compounds in environmental, waste and product samples Some of the analysis performed were gas chromatograph, gas mass spectroscopy, and non- destructive assay

The inorganic laboratories occupied Rooms 101 and 102, with some limited work being performed in Room 103 The inorganic laboratories handled both radioactive and non-radioactive samples The inorganic laboratories were equipped for radio-chemistry, wet chemical analysis, metals analysis, thermal analysis, physical testing, as well as sample preparation activities such as leaching, acid digestion, and microwave digestion

##### **Building 564**

Building 564 is an office building used to house support personnel for the Building 559 plutonium laboratory Functional organizations that occupied Building 564 were the Building 559 chemists, waste management engineers, and Lab QA personnel This building has always been used as an office building

##### **Building 561**

The Building 561 filter plenums are designed to control the spread of contamination through the use of differential pressure Building 561 has four independent filter plenums FP-300 is a two-stage exhaust plenum, which exhausts air from Building 559 and Building 528. FP-301 is a two-stage exhaust plenum, which exhausts the air from the hoods in the three laboratory rooms FP302 is a two-stage exhaust plenum, which exhausts the air from the laboratory gloveboxes The forth plenum is FP-305, which is used to exhaust the general room air in Building 561

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

**Building 562**

Building 562 is the emergency generator facility and has always been the emergency generator facility. An underground tank located at the southeast corner of the building originally supplied the generators with diesel fuel. This tank was replaced with an aboveground tank in the late 1990s. The original fire suppression was provided by a CO2 fire suppression system. This system was replaced with a water system in the mid 1990s. See the section on Tank 131 for more information about the original underground diesel tank.

**Building 563**

Building 563 is a cooling tower that providing Cooling water to Building 559 and is currently operational.

**Building 559A**

Building 559A is the accountability shelter and has always been the accountability shelter.

**Building 528**

Building 528 is a waste storage facility, which collects waste from the process waste sinks and the floor drains in the three main laboratory rooms (Rooms 101, 102, 103) in Building 559. In addition, Building 528 is connected to the plenum drains and fire deluge tank in Building 561. Due to radiological contamination (posted as CA), this building could not be entered to perform a physical inspection. The two waste collection tanks (V-1 and V-2) had several leaks in the past. Also, on several occasions, groundwater has seeped into the pit area and was pumped into the process waste tanks. Building 528 is not currently RCRA permitted. In the past, Building 528 was a permitted RCRA unit, which was closed in 1994 (no longer received RCRA waste). This building is currently radiological posted and access is restricted.

TK-14 - TK-14 is a new diesel storage tank and was installed in the late 1990s to replace Tank 130. This tank had no documented releases.

TK-15 - TK-15 is a new diesel storage tank and was installed in the late 1990s to replace Tank 131. This tank had no documented releases.

Tank 0128 - Tank 0128 is a nitrogen tank and was installed as part of the original construction. This tank had no documented releases.

Tank 0129 - Tank 0129 is an argon tank and was installed as part of the original construction. This tank had no documented releases.

Tank 130 - Tank 130 is the old underground diesel tank for the generator in Building 559. The tank was closed and foamed in place in 1998 (Roy F. Weston closure report 1998). This underground storage tank is located directly under the new replacement tank, TK-14.

Tank 131 - Tank 131 is the old underground diesel tank for the emergency generator in Building 562. The tank was closed and foamed in place in 1998 (Roy F. Weston, Closure Report 1998). This underground storage tank is located at the southeast corner of Building 562.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

**Current Operational Status**

Building 559 is currently operational and provides analytical support for the D&D of the Pu Buildings

Building 564 is currently operational and housed the support personnel for the Building 559 Pu laboratories

Building 563 is currently operational active and provides cooling water to Building 559

Building 562 is currently operational active and houses the Building 559 Clusters emergency generator

Building 561 is currently operational and houses the air plenums from Building 559

Building 559A is currently operational and acts as the accountability board for Building 559

Building 528 is currently operational and houses the process waste collection tank for Building 559

TK-14 and TK-15 are active diesel tanks. Tank 0128 is an active nitrogen tank Tank 0129 is an active argon tank  
Tank 130 is a foamed and closed underground diesel tank Tank 131 is a foamed and closed underground diesel tank

**Contaminants of Concern**

**Asbestos**

Describe any potential, likely, or known sources of Asbestos None of the facilities in this cluster have had a comprehensive asbestos building inspection performed on them Building 559, 564 and 561 are posted as potentially containing asbestos In addition, much of the steam piping and cooling water tanks in Building 559 and 561 are posted asbestos The 559 decommissioning strategy dated March 22, 2001 states that the ventilation floor penetrations are constructed of transite

Interviews indicated that asbestos wallboard, ceiling tile and pipe insulation are likely to be found in the Building 559 Cluster Facilities

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documents and perform additional interviews

**Beryllium (Be)**

Describe any potential, likely, or known Be production or storage locations The only facilities in the Building 559 Cluster on the RFETS list of known Be areas are Building 559 and 561 The Building 559 rooms include, but are not limited to, Rooms 101, 101D, 102, 103, 103E and 129. The Building 561 rooms, include, but are not limited to, Plenum 300, Plenum 301, and Plenum 302

Summarize any recent Be sampling results No recent Be sampling has been conducted

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documentation and perform additional interviews

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

**Lead**

Describe any potential, likely, or known sources of Lead (e g , paint, shielding, etc ) All of the facilities in the Building 559 Cluster may contain lead-based paints, lead in wiring, and lead solder Some of the gloveboxes in the three main Building 559 laboratory rooms are lead-lined and some of the gloves are lead-lined Shielding was commonly used during the performance of many of the analysis in the three main laboratories The X-ray machine in Room 103 has lead shielding

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documentation and perform additional interviews

**RCRA/CERCLA Constituents**

Describe any potential, likely, or known sources of RCRA/CERCLA constituents (e g , chemical storage, waste storage, and processes) Building 559 has several active permitted RCRA units, which are summarized below

- 1) Unit 90 102 is a mixed residue container storage unit in the gloveboxes in Room 103 This Unit is partially closed in accordance with the "RCRA Closure Plan for Mixed Residue Container Storage Units (11/22/98)
- 2) Unit 90 29 is a mixed residue container storage unit in the gloveboxes in Room 101 This Unit is partially closed in accordance with "RCRA Closure Plan for Mixed Residue Container Storage Units," (11/22/98)
- 3) Unit 559 1 is mixed residue container storage in the gloveboxes in Room 102 This unit is active
- 4) Unit 881 3B is a bench-scale hazardous waste treatment process in Room 102 The unit has recently been closed, and the summary closure report is expected to be submitted in September of 2001

Building 561 has an active RCRA unit, which is summarized below

- 1 Unit 10 is a mixed waste container storage unit, which is still active

Building 528 is not currently a RCRA unit, In the past Building 528 was a RCRA unit, which was closed in 1994

Samples containing RCRA/CERCLA constituents were frequently analyzed in the laboratories of Building 559 The wastes were collected in numerous RCRA Satellite Accumulation Areas located primarily in the laboratory areas

Building 559 also has a 90-Day Waste Accumulation Area located in Room 103E

The Building 563 cooling tower has used Chlorine bleach tablets to treat the cooling tower water since the early 1990s Process knowledge from other cooling towers on site indicates that the following chemicals may have been used to treat the water prior to the early 1990s

- 1) HTH (R) All-Purpose Algaecide Ammonium, Alkyl (C12-C16) Dimethylbenzyl-, Chlorides
- 2) Nalco 2536 Corrosion Inhibitor Sodium Nitrite and Sodium Tetraborate (anhydrous)
- 3) HTH (R) "Mustard" Algaecide Alkyldimethyl Dichloro Benzyl Ammonium Chloride and Copper Triethanolamine Complex

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

Describe any potential, likely, or known spill locations (and sources, if any) The laboratory rooms had several releases of sample material Building 559 did have a release from the waste process line documented in IHSS 500-159 Building 528 was a RCRA permitted unit prior to 1994 Building 528 had several leaks from the process tanks and infiltration of groundwater into the pit

Describe methods in which spills were mitigated, if any Spills were clean to the standard of the day These methods usually involved the use of an absorbent, a detergent, and fixing the contaminated area with paint as necessary

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documentation and perform additional interviews

**PCBs**

Describe any potential, likely, or known sources of PCBs (e g , light ballasts, paints, equipment, etc ) All of the Building 559 Cluster facilities may contain PCB-based paints, electrical equipment and light ballasts with PCBs No process equipment containing PCBs were located in any of these facilities The transformer east of building 559 is document in PAC 500-902 See section Below on Environmental Restoration concerns for more information on PAC 500-902

Describe any potential, likely, or known spill locations (and sources, if any) See section Below on Environmental Restoration concerns for more information on PAC 500-902

Describe methods in which spills were mitigated, if any See section Below on Environmental Restoration concerns for more information on PAC 500-902

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documentation and perform additional interviews



**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

**Radiological Contaminants**

Describe any potential, likely, or known radiological production or storage locations Buildings 559, 561, and 528 are all radiologically posted Waste from the Building 559 laboratory process waste sinks and drains are collected in the two waste storage tanks in Building 528 Although, the drains in the floors of the 561 plenums are connected to the Building 528 collection tanks, the plenum fire deluge system has never been activated

Buildings 564, 563, 562, and 559A have no radiological postings

Describe any potential, likely, or known spill locations (e g , known leaking sealed radioactive sources, leaking waste drums, potentially contaminated drains, etc ) Building 559 has had a release from the waste process line documented in IHSS 500-159 The three main laboratories in Building 559 have had numerous spills since they became operational in 1967, with most of the spills occurring in Room 102 The interviews indicated that during the installation of the new roof in 1985 contamination was detected in the sub-roofing material The contamination is located in the sub-roofing material above the main laboratories (see the Dick Link interview for identification of potential contamination in Rooms 129 and 130) Sealed sources were also used to calibrate the instruments, but the exact types of sources were not known

Building 528 has had numerous leaks from the tanks and piping since its original construction (the exact dates and details are not known)

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documentation and perform additional interviews

Describe methods in which spills were mitigated, if any Spills were cleaned up to the standards of the day These methods usually involved the use of an absorbent, a detergent, and fixing the contaminated area with paint as necessary

Describe any potential, likely, or known isotopes of concern (e g , weapons grade plutonium, uranium isotopes, pure beta emitters, mixed fission products, etc ) Isotopes of concern include, but are not limited to, plutonium, americium, uranium, and neptunium

Describe any potential, likely, or known external facility contamination (e g , stack release points, unfiltered ventilation, facility's physical location to known site releases, etc ) See section Below on Environmental Restoration concerns for more information on PACs, IHSSs, and UBCs related to the Building 559 Cluster

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documentation and perform additional interviews

# D&D RISS Facility Characterization Historical Site Assessment Report September, 2001 Rev. 0

## Environmental Restoration Concerns

Describe any ER concerns that could affect facility characterization (e g , IHSSs, PACs, and UBCs) Several UBCs, IHSSs and PACs effect or are in close proximity to Building 559 and 528

- 1) Building 559 and 528 each have UBCs
- 2) IHSS 500-159 – The original waste process line for Building 559 to Building 528 was constructed in 1969 and was made of Pyrex glass In 1972 it was determined that the line was leaking Several years later contamination was found in the Building 559 process waste valve pit, and the manhole southwest of Building 559 The 4600 gallon of contaminated water leaked into the Building 528 process waste tank from a broken 3-inch pipe between Building 559 and 528 This IHSSs is still active, see IHSS 500-159 for more details
- 3) PAC 500-197 – There is a burial ground just west of Building 559 This PAC is being mentioned because of its proximity to Building 559 This PAC is still active, see PAC 500-197 for additional information
- 4) PAC 500-902 – The transformer on the east side of Building 559 was found to be leaking This site was remediated in 1995 and a NFA request was submitted in the 1996 HRR annual update and is awaiting approval

Note SME should evaluate and/or verify this information during the RLC/PDS process SME may need to review additional documentation and perform additional interviews

## Additional Information

Describe any additional information that may be useful during facility characterization (e g , contaminant migration routes, waste handling operations, physical hazards, Historical Release Reports, WSRIC data, etc.) Building 559, 563, 562, 561 and 528 have WSRICs that detail the building waste streams and how they are managed In general, the building WSRICs detail the management of used oils batteries, maintenance wastes and analytical waste See the individual building WSRICs for additional information

## References

Provide all sources of information utilized to gather data for facility history (e g , documents, files, interviews) Sources reviewed to complete this HSA were the RFETS Facility list, the Historical Release Report, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases The Building 559 has a Facility Safety Analysis, which includes Building 560, 563, 562, 561, 560 and 528 Only building 559, 563, 562, 561, and 528 have a WSRIC In addition, a facility walkdown and interviews were performed

## Waste Volume Estimates and Material Types

Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste
Building 559	142,600	100	1300	0	3700	TBD	Built-up Roof - 6700
Building 564	1500	50	1000	650	175	TBD	0
Building 563	300	150	50	0	0	TBD	Fiberboard - 250
Building 562	1300	0	80	0	0	TBD	Built-up Roof- 40
Building 561	18500	30	250	0	0	TBD	Built-up Roof - 1100
Building 559A	0	40	0	0	0	TBD	0
Building 528	2300	0	180	200	0	TBD	0
TK-14	100	0	200	0	0	0	0
TK-15	75	0	200	0	0	0	0

26

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
September, 2001 Rev. 0**

Tank-028	25	0	225	0	0	0	0
Tank-029	25	0	225	0	0	0	0
Tank-130	50	0	200	0	0	0	0
Tank-131	50	0	200	0	0	0	0

**Further Actions**

Recommend any further actions, if any (e g , characterization, decontamination, special handling, etc )

Begin the RLC/PDS process

**Note.**

This HSA was performed prior to SME walkdowns, and chemical and radiological characterization package preparations. Information contained in this HSA only represents a "snapshot" in time. Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report. However, this report will not be amended, and the newer data will take precedence over the data in the report. Newer Data will appear in the RLCR/PDSR. SME may need to review additional documentation and perform additional interviews.

Prepared By.

Doug Bryant

Name

Signature

Date

# ATTACHMENT C

## Radiological Characterization Packages



**Rocky Flats Environmental Technology Site**

**RECONNAISSANCE LEVEL CHARACTERIZATION**

**RADIOLOGICAL CHARACTERIZATION PLAN**

**B559 CLUSTER CLOSURE PROJECT  
(B562, B563, and B564)**

**REVISION 0**

**September 26, 2001**

Prepared by: Jeff Ambrose Date 10-3-01  
Jeff Ambrose, Radiological Engineer

Reviewed by: Duane Parsons Date 10/3/01  
Duane Parsons, Facility Characterization Coordinator

Reviewed by: Paul Miles Date 10/5/01  
Paul Miles, Quality Assurance

Approved by: Bob Richardella Date 10/9/01  
Bob Richardella, Closure Project Facility Manager

### **Notes and Assumptions:**

- This characterization Plan was prepared in accordance with MAN-077-DDCP, D&D Characterization Protocols (07/26/00), and MAN-127-PDSP, Pre-Demolition Survey Plan for D&D Facilities (02/14/01)
- PDSP Data Quality Objectives were used to develop this characterization plan

### **Instructions:**

- 1 Verify characterization activities are on the Plan-of-the-Day (POD)
- 2 Perform a Pre-Evolution Brief and/or Job Task Brief in accordance with the Site Conduct of Operations Manual
- 3 Verify personnel have appropriate training for the applicable tasks they will be performing
- 4 Comply with RWP requirements, if applicable
- 5 Comply with JHA and facility PPE requirements, as applicable
- 6 Inform the Facility Manager, or designee prior to starting characterization activities
- 7 Follow applicable characterization and sampling procedures
- 8 Notify Wackenhut Security (x2444) and the Shift Supervisor (x2914), and verify appropriate safety precautions/requirements are followed prior to accessing facility roofs
- 9 Coordination with the Environmental Restoration Program organization will be required to further characterize underneath facility foundations and slabs prior to removal
- 10 Collect and maintain all characterization paperwork in the Project File(s)
- 11 All radiological surveys shall be conducted in accordance with the sampling and instruction forms included in B559 Cluster Survey Package numbers 562-A-001, 563-A-001, and 564-A-001. Sample locations are denoted on scaled maps attached to each survey package

Non-Impacted Areas											
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No Non-Impacted Areas Identified in this characterization unit. Historical Site Assessment and process knowledge indicate no need for this classification
Non-Impacted Totals										0	0

Class 1 Areas											
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No Class 1 Areas Identified in this characterization unit. Historical Site Assessment and process knowledge indicate no need for this classification
Class 1 Totals										0	0

Class 2 Areas											
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No Class 2 Areas Identified in this characterization unit. Historical Site Assessment and process knowledge indicate no need for this classification
Class 2 Totals										0	0

# Class 3 Areas

A	563-A-001 563 04/11/87	3	Interior & Exterior of B562	290 153 - Interior 137 - Exterior	32	8 - Interior 5 - Exterior	15-random 15-biased 2-QC	15-random 15-biased	0	Areas are not expected to contain, or have ever contained, any residual radioactivity greater than the DCGL <sub>w</sub> . Historical Site Assessment and process knowledge of this unit provide a high degree of confidence that no individual measurement will exceed the DCGL <sub>w</sub> . A 5% scan on interior surfaces and a 3% scan on exterior surfaces will be biased towards areas of greatest potential for contamination. Scan percentages are justified due to the historical process knowledge of the facility and exterior characterization results of surrounding facilities. Additional biased measurements have been prescribed and will be collected to ensure uniform coverage of all building surfaces. These additional biased measurements are above and beyond requirements set forth in the RFETS PDSP and will not be used in any statistical analysis (i.e., MARSSIM Sign Test).
A	563-A-001	3	B563	330	80	17	15-random 2-QC	15-random	0	Areas are not expected to contain, or have ever contained, any residual radioactivity greater than the DCGL <sub>w</sub> . Historical Site Assessment and process knowledge of this unit provide a high degree of confidence that no individual measurement will exceed the DCGL <sub>w</sub> . A 5% scan on surfaces will be biased towards areas of greatest potential for contamination. Scan percentages are justified due to the historical process knowledge of the facility and exterior characterization results of surrounding facilities.  Due to the inaccessibility of the interior surfaces of B563, 15 additional biased TSA and Smear measurements will be obtained during the demolition phase using the Waste Release Evaluation process.

Biased measurement locations include high traffic areas such as building entrances, exits, and hallways, HVAC intakes and exhaust ducts, storage areas; areas of frequent personnel contact such as doors and door frames, and horizontal surfaces



# Class 3 Areas

A	584-A-001	3	Interior & Exterior of B584	1460 896 - Interior 564 - Exterior	259	45 - Interior 17 - Exterior	15-random 15-biased 2-QC	15-random 15-biased	0	Areas are not expected to contain, or have ever contained, any residual radioactivity greater than the DCG <sub>LW</sub> . Historical Site Assessment and process knowledge of this unit provide a high degree of confidence that no individual measurement will exceed the DCG <sub>LW</sub> . A 5% scan on interior surfaces and a 3% scan on exterior surfaces will be biased towards areas of greatest potential for contamination. Scan percentages are justified due to the historical process knowledge of the facility and exterior characterization results of surrounding facilities. Additional biased measurements have been prescribed and will be collected to ensure uniform coverage of all building surfaces. These additional biased measurements are above and beyond requirements set forth in the RFETS PDSP and will not be used in any statistical analysis (i.e., MARSSIM Sign Test)
			Class 3 Totals	2080	371	62	90	90	0	
All Class Areas			All Class Totals	2080	371	62	90	90	0	

\* Biased measurement locations include high traffic areas such as building entrances, exits, and hallways, HVAC intakes and exhaust ducts, storage areas, areas of frequent personnel contact such as doors and door frames, and horizontal surfaces

# ATTACHMENT D

## Chemical Characterization Packages



**Rocky Flats Environmental Technology Site**

**RECONNAISSANCE LEVEL CHARACTERIZATION/  
PRE-DEMOLITION SURVEY**

**CHEMICAL CHARACTERIZATION PLAN  
(PACKAGE)**

**559 CLUSTER CLOSURE PROJECT  
(Buildings 562, 563 and 564)**

**REVISION 0**

**September 27, 2001**

Prepared by: Steve Lappi Date: 10/1/01  
Steve Lappi, Industrial Hygiene

Prepared by: Shawn Knapp Date: 10/2/01  
Shawn Knapp, Environmental Compliance

Reviewed by: Paul Miles Date: 10/4/01  
Paul Miles, Quality Assurance

Reviewed by: Duane Parsons Date: 10/4/01  
Duane Parsons, Characterization Coordinator

Approved by: Bob Richardella Date: 10/9/01  
Bob Richardella, KH Closure Project Manager

35

## **RLC/PDS CHEMICAL CHARACTERIZATION PLAN (PACKAGE)**

### **559 Cluster: (Buildings 562, 563 and 564)**

#### **Notes and Assumptions:**

- This characterization package was prepared in accordance with MAN-077-DDCP, D&D Characterization Protocols, April 23, 2001, and MAN-127-PDSP, Pre-Demolition Survey Plan for D&D Facilities, April 23, 2001.
- PDSP Data Quality Objectives were used to develop this characterization package
- Demolition debris will be disposed of as PCB Bulk Product Waste, therefore, painted concrete surfaces will not be sampled for PCBs
- Lead sampling is not required in the 559 Cluster All paint will remain a part of the infrastructure during demolition and therefore does not require sampling per Environmental Waste Compliance Guidance No 27, Lead Based Paint (LBP) and LBP Debris Disposal Sampling for lead for IH requirements will be at the discretion of the demolition contractor
- The 563 cooling tower is constructed of wood studs, plywood, and corrugated fiberglass siding Other building materials identified during the walk-down may contain asbestos (> 1%) caulking, flashing, and TSI Building 564 contains several building materials that could contain either non-friable or friable asbestos, namely, drop ceiling tiles, 12" x 12" vinyl floor tiles and adhesive, sheet rock joint compound, and tar-impregnated roofing A CDPHE-certified asbestos inspector will conduct the inspection and sampling in accordance with PRO-563-ACPR, *Asbestos Characterization Protocol*, Revision 1

36

**Instructions:**

- 1 Verify characterization activities are on the Plan-of-the-Day (POD)
- 2 Perform a Pre-Evolution Brief and/or Job Task Brief in accordance with the Site Conduct of Operations Manual
3. Verify personnel have appropriate training for the applicable tasks they will be performing.
- 4 Comply with RWP and Beryllium Work Form (BWF) requirements, if applicable
- 5 Comply with facility PPE requirements, as applicable
- 6 Inform the Facility Manager, or designee prior to starting characterization activities

**WARNING**

Confined space entry is NOT authorized during the performance of this plan (package)

- 7 Follow applicable characterization and sampling procedures
- 8 Have D&D craft perform the following, as required
  - Lift deck grating and access covers to assist in obtaining samples in trenches, pits & sumps Use forklift with approved lift attachment, as necessary
  - Cut (using sawsall) deck grating and access covers, if necessary, to assist in obtaining samples in trenches, pits & sumps
  - Assist in accessing ventilation ducts for sampling, including removal of blank flanges of ventilation pipes via scaffolding, ladders, or other suitable means
- 9 Notify Wackenhut Security (x2444) and the Shift Supervisor (x2914), and verify appropriate safety precautions/requirements are followed prior to accessing facility roofs
- 10 Coordination with the Environmental Restoration Program organization will be required to further characterize soils around and underneath facility foundations and slabs prior to removal
11. Collect and maintain all characterization paperwork in the Characterization Closure Project File(s), and all electronic data in the appropriate D&D RISS subdirectory

<b>ASBESTOS</b>		
<b>Sample Location</b>	<b>Number of Samples</b>	<b>Sample location and justification/rational</b>
562	3	Building 562 is approximately 384 square feet with 12' high walls constructed of cinder blocks on a concrete pad, which houses a standby diesel generator. The built-up roofing may contain asbestos, which may stay in place during demolition. Three (3) random samples of the roofing material will be taken for disposal purposes.
563	6	The 563 cooling tower is constructed of wood studs, plywood, and corrugated fiberglass siding. Other building materials identified during the walk-down may contain asbestos (> 1%) caulking, flashing, and TSI on the associated water pipes. No known asbestos surveys exist for this facility. Therefore, sampling will be performed on suspect materials.
564	14	Building 564 is a single-story pre-fabricated, office building with approximately 3,000 square feet of floor space. It contains several building materials that could contain either non-friable or friable asbestos, namely, drop ceiling tiles, 12" x 12" vinyl floor tiles and adhesive, sheet rock joint compound, and tar-impregnated roofing. Therefore, sampling will be performed on suspect materials.
<b>Total Samples</b>	<b>23</b>	Sample locations will be specified on sample maps for the characterization efforts. Samples will be obtained in accordance with PRO-653-ACPR, Asbestos Characterization Procedure, and 40 CFR Part 763, Subpart E.

<b>BERYLLIUM</b>		
<b>Sample Location</b>	<b>Number of Samples (smears)</b>	<b>Sample location and justification/rational</b>
562	5 Biased	There is no documented supporting data or process history that proves beryllium was not used or stored in this building. Therefore, five limited, biased, smear samples will be obtained.
563	0	563 (Cooling Tower) is not on the RFETS List of Known Be Areas. Based on the 559 Cluster Historical Site Assessment Report and Interview Checklists, there is adequate historical and process knowledge to conclude that beryllium was not used or stored in this facility. Therefore, no random and/or biased samples are required to delineate potential Be contamination in the 563 Cooling Tower.
564	5 Biased	There is no documented supporting data or process history that proves beryllium was not used or stored in this building. Building 564, however, is a pre-fabricated office building that has been used primarily in that capacity. Therefore, five limited, biased smear samples will be obtained to determine if any Be contamination exists.
<b>Total Samples</b>	<b>10 Biased</b>	Samples will be obtained at locations specified on sample map(s) in accordance with PRO-536-BCPR, Beryllium Characterization Procedure.

<b>RCRA/CERCLA CONSTITUENTS</b>		
<b>Sample Location</b>	<b>Number of Samples</b>	<b>Sample location and justification/rational</b>
562, 563 and 564	0	Based on the Historical Site Assessment Report, Interview Checklists, and facility walkdowns, no hazardous activities resulting in a release of RCRA or CERCLA constituents occurred in this facility, therefore sampling for RCRA/CERCLA constituents is not required.
<b>Total Samples</b>	<b>0</b>	

38

PCBs		
Sample Location	Number of Samples	Sample location and justification/rational
562, 563 and 564	0	The Historical Site Assessment Report, Interview Checklists, and facility walkdowns of this building indicate no potential for PCB contamination, therefore no sampling is required. Based on the age of B562 (constructed in 1973), PCB's are assumed to be in the structure paint. B563 and B564 were built in 1983 and therefore, would not contain PCBs in the structure paint. B563 and B564 can be disposed of as sanitary waste. Painted surfaces of B562 shall be considered PCB Bulk Product Waste.
Total Samples	0	

- PCB ballasts, fluorescent light bulbs, potential mercury switches in thermostats, and mercury vapor light bulbs will be identified and removed prior to demolition.

# ATTACHMENT E

## Radiological Data Summaries and Survey Maps



## **SURVEY UNIT DATA SUMMARY: 562-A-001**

### **Survey Unit Description:**

**Interior and Exterior of Building 562**

## Survey Unit 562-A-001 Data Summary

### Total Surface Activity Measurements

30	30
Number Required	Number Obtained

MIN	-18.9	dpm/100 cm <sup>2</sup>
MAX	59.8	dpm/100 cm <sup>2</sup>
MEAN	7.9	dpm/100 cm <sup>2</sup>
STD DEV	18.3	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>

### Removable Activity Measurements

30	30
Number Required	Number Obtained

MIN	-0.9	dpm/100 cm <sup>2</sup>
MAX	11.2	dpm/100 cm <sup>2</sup>
MEAN	3.0	dpm/100 cm <sup>2</sup>
STD DEV	3.0	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

42

# **Survey Unit 562-A-001 Total Surface Activity Results**

Manufacturer	NE Electra	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP 6	DP 6
Instrument ID#	9	10	11	12
Serial #	4335	4335	1840	3114
Cal Due Date	3/17/02	3/17/02	4/9/02	4/25/02
Analysis Date	10/24/01	10/25/01	10/25/01	11/5/01
Alpha Eff (c/d)	0.216	0.216	0.212	0.211
Alpha Bkgd (cpm)	3.3	2.7	2.7	0.0
Sample Time (min)	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	41.2	38.2	38.9	9.5

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm <sup>2</sup> )
1	9	2.0	2.7	9.7
2	12	11.3	4.0	34.2
3	10	4.7	4.0	2.8
4	12	4.7	3.3	2.9
5	10	3.3	4.7	3.6
6	9	6.7	6.7	12.1
7	9	10.7	5.3	30.6
8	12	16.7	4.0	59.8
9	9	9.3	2.9	24.1
10	10	6.3	4.7	10.2
11	10	8.0	6.7	18.1
12	10	4.7	4.0	2.8
13	10	4.0	7.3	-0.4
14	9	2.7	2.7	-6.4
15	10	2.0	3.0	9.7
16	9	8.7	6.7	21.4
17	9	12.0	3.3	36.6
18	9	10.0	4.0	27.4
19	9	8.0	3.3	18.1
20	9	10.0	4.7	27.4
21	9	2.0	4.0	9.7
22	9	2.0	1.3	9.7
23	9	1.3	3.3	12.9
24	9	2.0	2.0	9.7
25	9	4.0	4.7	0.4
26	9	4.0	2.7	0.4
27	9	0.0	3.3	18.9
28	9	4.7	6.0	2.8
29	9	4.7	5.3	2.8
30	9	2.7	2.0	-6.4

Average LAB	4.1
MIN	18.9
MAX	59.8
MEAN	7.9
SD	18.3
Transuranic DCGL <sub>w</sub>	100

22QC	11	3.3	1.3	0.7
21QC	11	3.0	5.0	0.7

Average LAB	3.2
MIN	0.7
MAX	0.7
MEAN	0.0
SD	1.0
Transuranic DCGL <sub>w</sub>	100

43

# Survey Unit 562-A-001 Smear Results

Manufacturer	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4	5	6
Serial #	1130	1269	833	1157	830	770
Cal Due Date	1/19/02	1/18/02	1/31/02	2/16/02	2/16/02	1/19/02
Analysis Date	10/25/01	10/25/01	11/6/01	11/6/01	11/6/01	11/6/01
Alpha Eff (c/d)	0.33	0.33	0.33	0.33	0.33	0.33
Alpha Bkgd (cpm)	0.3	0.1	0.2	0.0	0.4	0.3
Sample Time (min)	2	2	2	2	2	2
Bkgd Time (min)	10	10	10	10	10	10
MDC (dpm/100cm <sup>2</sup> )	8.8	7.0	8.0	4.5	9.4	8.8

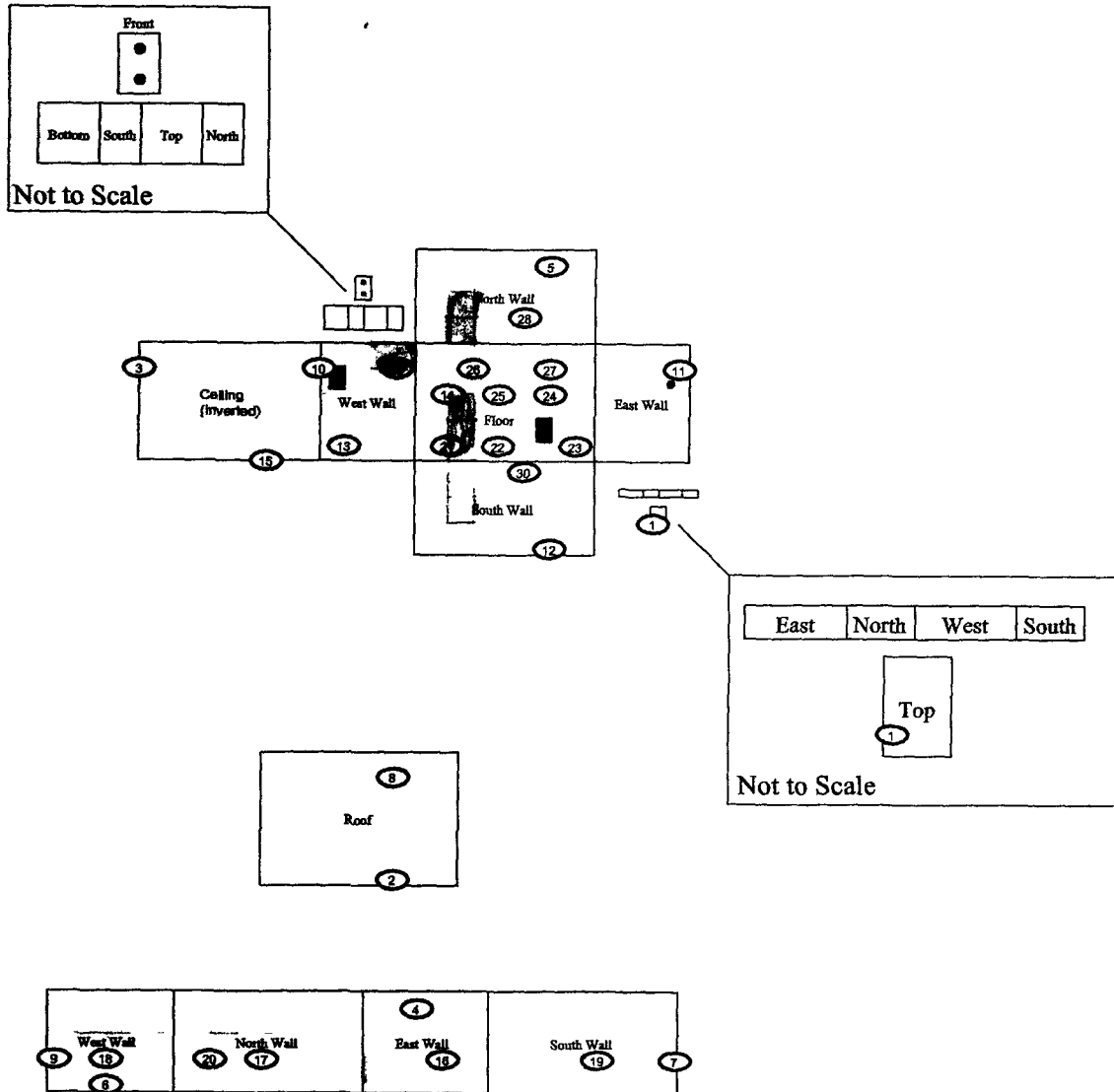
Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	1	10	2.1
2	5	10	3.0
3	2	00	-0.3
4	4	10	3.0
5	1	40	11.2
6	2	10	2.7
7	1	20	5.2
8	3	00	-0.6
9	2	10	2.7
10	1	10	2.1
11	2	10	2.7
12	1	10	2.1
13	2	10	2.7
14	1	30	8.2
15	2	00	-0.3
16	1	10	2.1
17	2	10	2.7
18	1	20	5.2
19	2	00	-0.3
20	1	20	5.2
21	2	00	-0.3
22	1	00	-0.9
23	2	00	-0.3
24	1	30	8.2
25	2	00	-0.3
26	1	30	8.2
27	2	10	2.7
28	1	10	2.1
29	2	10	2.7
30	1	20	5.2
		MIN	0.9
		MAX	11.2
		MEAN	3.0
		SD	3.0
		Transuranic DCGL <sub>w</sub>	20

44

# PRE-DEMOLITION SURVEY

Survey Area A Survey Unit 562-A-001 Type 1  
 Building 562  
 Survey Unit Description Interior & Exterior  
 Total Area 290 sq m Total Floor Area 32 sq m

## Building 562



☐ = Scan Areas

<b>SURVEY MAP LEGEND</b> (R) Smear & TSA Location (W) Smear TSA & Sample Location Open/Inaccessible Area Area in Another Survey Unit	Under the United States Government seal, neither the U.S. Government nor the U.S. Navy, nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe upon privately owned rights.	0 30 FEET 0 10 METERS 1 inch = 24 feet 1 grid sq = 1 sq m.	U.S. Department of Energy Rocky Flats Environmental Technology Site Prepared by GHS Dept. 303-866-7760 Prepared for <b>DynCorp</b> THE ART OF TECHNOLOGY MAP ID: 52001/01-0015/0562 September 20, 2001
<b>Scan Survey Information</b> Survey Instrument ID #(s) RCT ID #(s)	3112 3.16		

562-A-001

PAGE 1 OF 1

45

## **SURVEY UNIT DATA SUMMARY: 563-A-001**

### **Survey Unit Description:**

**Exterior of the B563 Cooling Tower**

## Survey Unit 563-A-001 Data Summary

### Total Surface Activity Measurements

15	15
Number Required	Number Obtained

MIN	6.4	dpm/100 cm <sup>2</sup>
MAX	83.4	dpm/100 cm <sup>2</sup>
MEAN	32.0	dpm/100 cm <sup>2</sup>
STD DEV	22.4	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>

### Removable Activity Measurements

15	15
Number Required	Number Obtained

MIN	-0.3	dpm/100 cm <sup>2</sup>
MAX	5.8	dpm/100 cm <sup>2</sup>
MEAN	1.9	dpm/100 cm <sup>2</sup>
STD DEV	2.4	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

47

# Survey Unit 563-A-001 Total Surface Activity Results

Manufacturer	NE Electra	NE Electra
Model	DP-6	DP-6
Instrument ID#	7	8
Serial #	4335	1840
Cal Due Date	3/17/02	4/9/02
Analysis Date	10/29/01	10/29/01
Alpha Eff (c/d)	0.216	0.212
Alpha Bkgd (cpm)	2.7	2.0
Sample Time (min)	1.5	1.5
LAB Time (min)	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	38.2	34.8

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm <sup>2</sup> )
1	7	8.0	5.3	6.4
2	7	15.3	5.3	40.2
3	7	12.7	3.3	83.4
4	7	14.7	6.7	37.4
5	7	9.3	7.3	12.4
6	7	10.7	6.0	18.9
7	7	11.3	10.0	21.7
8	7	15.3	11.3	40.2
9	7	9.3	6.0	12.4
10	7	12.0	5.3	24.9
11	7	20.7	10.0	65.2
12	7	8.7	4.7	9.7
13	7	12.0	3.3	24.9
14	7	11.6	8.0	23.1
15	7	14.0	6.7	59.3

Average LAB	6.6
MIN	6.4
MAX	83.4
MEAN	32.0
SD	22.4
Transuranic DCGL <sub>w</sub>	100

5 QC	8	10.3	7.3	11.8
15 QC	8	13.3	8.3	25.9

Average LAB	7.8
MIN	11.8
MAX	25.9
MEAN	18.9
SD	10.0
Transuranic DCGL <sub>w</sub>	100

48



## Survey Unit 563-A-001 Smear Results

<b>Manufacturer:</b>	Eberline	Eberline
<b>Model</b>	SAC-4	SAC-4
<b>Instrument ID#</b>	1	2
<b>Serial #.</b>	1269	1130
<b>Cal Due Date:</b>	1/18/02	1/19/02
<b>Analysis Date:</b>	10/29/01	10/29/01
<b>Alpha Eff. (c/d)</b>	0 33	0 33
<b>Alpha Bkgd (cpm)</b>	0 1	0
<b>Sample Time (min)</b>	2	2
<b>Bkgd Time (min)</b>	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	7 0	4 5


<b>Sample Location Number</b>	<b>Instrument ID#</b>	<b>Gross Counts (cpm)</b>	<b>Net Activity (dpm/100 cm<sup>2</sup>)</b>
1	1	2 0	5 8
2	2	1 0	3 0
3	1	2 0	5 8
4	2	0 0	0 0
5	1	1 0	2 7
6	2	0 0	0 0
7	1	0 0	-0 3
8	2	0 0	0 0
9	1	0 0	-0 3
10	2	1 0	3 0
11	1	2 0	5 8
12	2	0 0	0 0
13	1	0 0	-0 3
14	2	1 0	3 0
15	1	0 0	-0 3
		MIN	-0 3
		MAX	5 8
		MEAN	1 9
		SD	2 4
		Transuranic	20

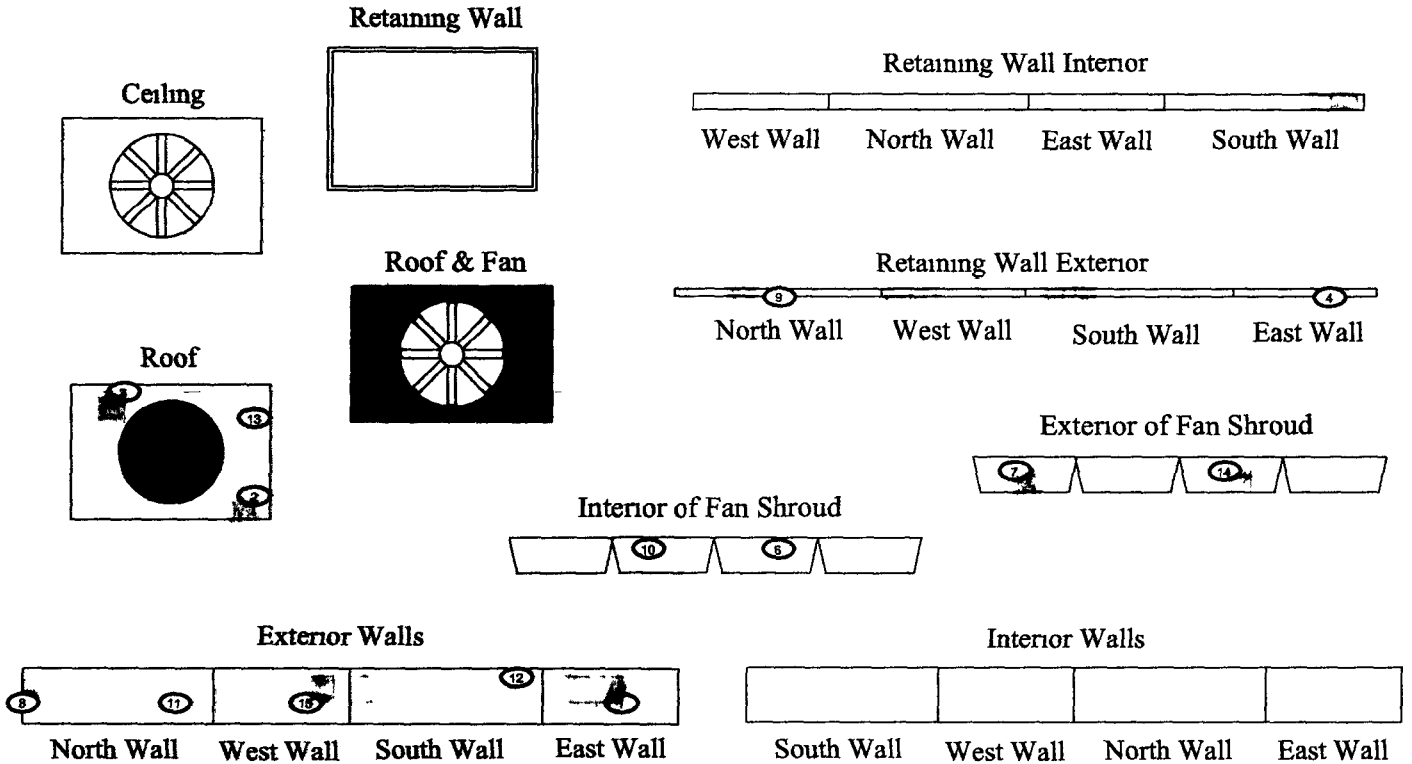
49

# PRE-DEMOLITION SURVEY

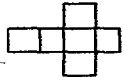
Survey Area. A      Survey Unit 563-A-001      Type 1  
 Building 563  
 Survey Unit Description Interior & Exterior  
 Total Area 340 sq m      Total Floor Area 80 sq m

## 563 Cooling Tower

 = Scan Areas

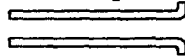


Metal Container  
Interior

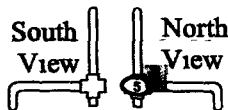


3' Pipe  


West Side  
Top



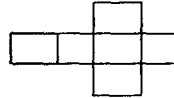
West Side  
Bottom



Metal Container  
Exterior

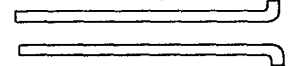


Metal Container  
Interior

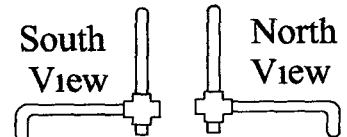


3' Pipe  

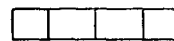

West Side  
Top







West Side  
Bottom



Metal Container  
Exterior

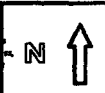


Not to Scale

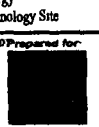
SURVEY MAP LEGEND	
	Scan Area
	Sensor TSA & Sample Location
	Open/Inaccessible Area
	Area in Another Survey Unit

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Scan Survey Information  
 Survey Instrument ID # (s) 7.8  
 RCT ID # (s) 1.2



1 inch = 24 feet 1 grid sq = 1 sq. m.

U.S. Department of Energy Rocky Flats Environmental Technology Site	
Prepared by G28 Dept. 303-266-7770 Prepared for:	
<b>DynCorp</b> THE ART OF TECHNOLOGY	
MAP ID: h2001/01-0915/0503 September 17, 2001	

563-A-001

PAGE 1 OF 1

50

## **SURVEY UNIT DATA SUMMARY: 564-A-001**

### **Survey Unit Description:**

**Interior and Exterior of Building 564**

## Survey Unit 564-A-001 Data Summary

### Total Surface Activity Measurements

30	30
Number Required	Number Obtained

MIN	-9.1	dpm/100 cm <sup>2</sup>
MAX	96.0	dpm/100 cm <sup>2</sup>
MEAN	25.3	dpm/100 cm <sup>2</sup>
STD DEV	27.2	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>

### Removable Activity Measurements

30	30
Number Required	Number Obtained

MIN	-0.9	dpm/100 cm <sup>2</sup>
MAX	15.2	dpm/100 cm <sup>2</sup>
MEAN	3.4	dpm/100 cm <sup>2</sup>
STD DEV	4.2	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

52

**Survey Unit 564-A-001 Total Surface Activity Results**

Manufacturer	NE Electra	NE Electra	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP 6	DP-6	DP 6
Instrument ID#	7	8	9	10	11
Serial #	1840	4335	4335	1840	3114
Cal Due Date	4/9/02	3/17/02	3/17/02	4/9/02	4/25/02
Analysis Date	10/23/01	10/23/01	10/24/02	10/24/01	11/5/01
Alpha Eff (c/d)	0.212	0.216	0.216	0.212	0.211
Alpha Bkgd (cpm)	2.0	3.3	4.0	2.7	0.0
Sample Time (min)	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	34.8	41.2	44.4	38.9	9.5

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	LAB Gross Counts (cpm)	Sample Net Activity (dpm/100cm <sup>2</sup> )
1	8	6.0	8.7	3.4
2	11	12.7	6.0	35.2
3	8	4.7	4.0	2.6
4	8	3.3	4.0	9.1
5	8	5.3	7.3	0.2
6	8	6.7	4.7	6.6
7	8	10.7	4.0	25.2
8	8	15.3	5.3	46.5
9	8	5.3	6.7	0.2
10	11	16.7	4.0	54.2
11	8	4.0	2.7	5.9
12	11	16.0	3.3	50.9
13	8	14.7	6.7	43.7
14	11	9.3	2.7	19.1
15	8	7.0	7.3	8.0
16	8	5.3	2.7	0.2
17	8	4.7	5.3	2.6
18	8	4.0	3.3	5.9
19	8	6.0	2.7	3.4
20	8	5.3	4.0	0.2
21	8	10.0	5.3	21.9
22	8	11.3	6.7	27.9
23	8	15.3	4.0	46.5
24	8	16.7	9.3	52.9
25	8	19.3	3.3	65.0
26	8	18.7	4.7	62.2
27	8	10.0	9.3	21.9
28	8	16.7	6.0	52.9
29	8	14.0	7.3	40.4
30	8	26.0	6.7	96.0
			Average LAB	5.3
			MIN	9.1
			MAX	96.0
			MEAN	25.3
			SD	27.2
			Transuranic DCGL <sub>w</sub>	100

17 QC	7	3.3	3.3	7.9
26 QC	7	18.0	6.7	60.2
			Average LAB	5.0
			MIN	7.9
			MAX	60.2
			MEAN	26.2
			SD	48.1
			Transuranic DCGL <sub>w</sub>	100

53

# Survey Unit 564-A-001 Smear Results

<b>Manufacturer</b>	Eberline	Eberline	Eberline	Eberline	Eberline	Eberline
<b>Model</b>	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#</b>	1	2	3	4	5	6
<b>Serial #</b>	1130	1269	833	1157	830	770
<b>Cal Due Date</b>	1/19/02	1/18/02	1/31/02	2/16/02	2/16/02	1/19/02
<b>Analysis Date</b>	10/24/01	10/24/01	11/6/01	11/6/01	11/6/01	11/6/01
<b>Alpha Eff (c/d)</b>	0.33	0.33	0.33	0.33	0.33	0.33
<b>Alpha Bkgd (cpm)</b>	0.2	0.3	0.2	0.0	0.4	0.0
<b>Sample Time (min)</b>	2	2	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	8.0	8.8	8.0	4.5	9.4	4.5

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	1	2.0	5.5
2	3	1.0	2.4
3	2	0.0	-0.9
4	1	0.0	-0.6
5	2	0.0	0.9
6	1	0.0	-0.6
7	2	2.0	5.2
8	1	0.0	0.6
9	2	1.0	2.1
10	6	3.0	9.1
11	1	0.0	-0.6
12	4	5.0	15.2
13	2	0.0	-0.9
14	5	1.0	1.8
15	1	2.0	5.5
16	2	0.0	-0.9
17	1	2.0	5.5
18	2	0.0	-0.9
19	1	1.0	2.4
20	2	0.0	-0.9
21	1	2.0	5.5
22	2	0.0	-0.9
23	1	2.0	5.5
24	2	2.0	5.2
25	1	4.0	11.5
26	2	1.0	2.1
27	1	2.0	5.5
28	2	3.0	8.2
29	1	3.0	8.5
30	2	2.0	5.2
		MIN	0.9
		MAX	15.2
		MEAN	3.4
		SD	4.2
		Transuranic	20

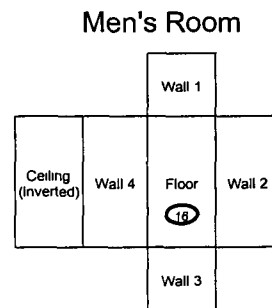
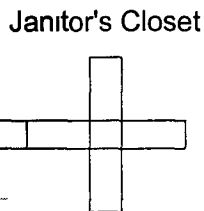
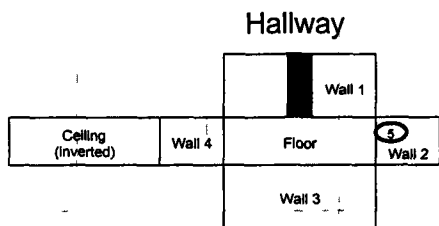
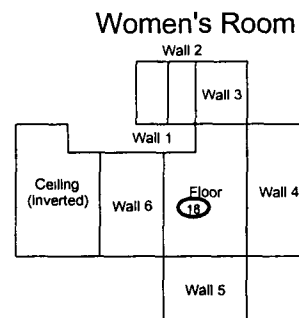
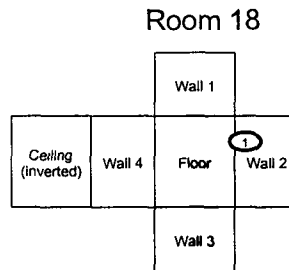
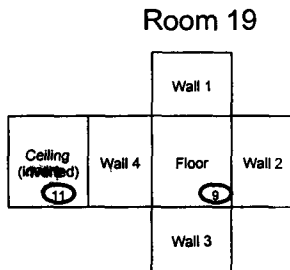
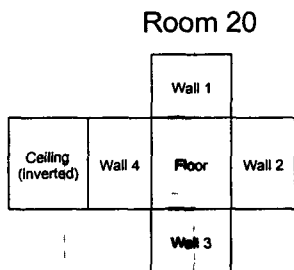
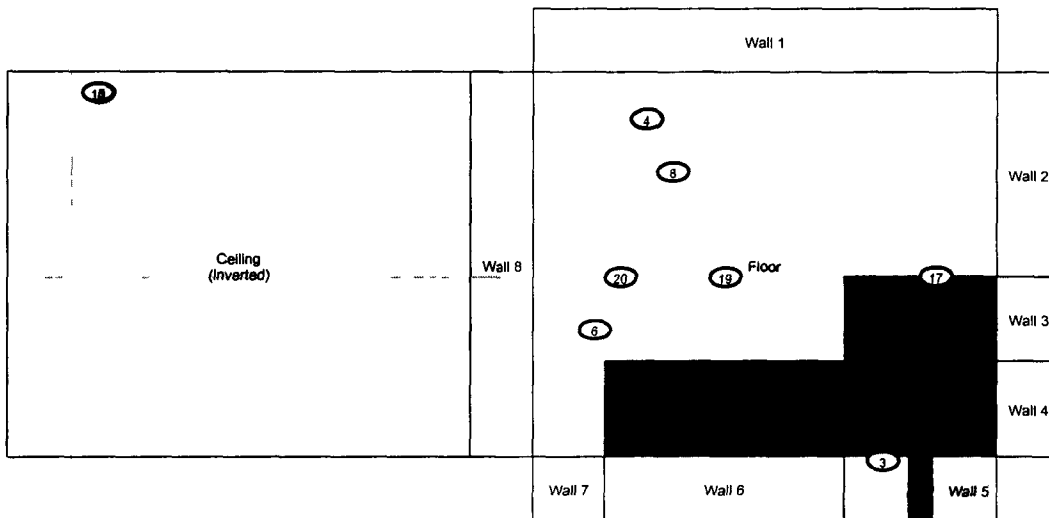
54

# PRE-DEMOLITION SURVEY

Survey Area A Survey Unit 564 A-001 Type 1  
 Building 564  
 Survey Unit Description Interior & Exterior  
 Total Area 1460 sq m Total Floor Area 259 sq m

## Building 564 (Interior)

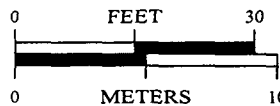
 = Scan Areas



**SURVEY MAP LEGEND**  
 (Circled Number) Smear & TSA Location  
 (Diamond) Smear TSA & Sample Location  
 (Black Box) Open/Inaccessible Area  
 (White Box) Area in Another Survey Unit

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Scan Survey Information  
 Survey Instrument ID # (s) 9, 10  
 RCT ID # (s) 3, 3



1 inch = 24 feet 1 grid sq = 1 sq m

U.S. Department of Energy  
 Rocky Flats Environmental Technology Site  
 Prepared by GHS Dept 303 966-7707 Prepared for  
**DynCorp**  
 THE ART OF TECHNOLOGY  
 KAISER HILL  
 MAP ID: R2001/01-0915/B544 September 20, 2001

55  
 564-A-001

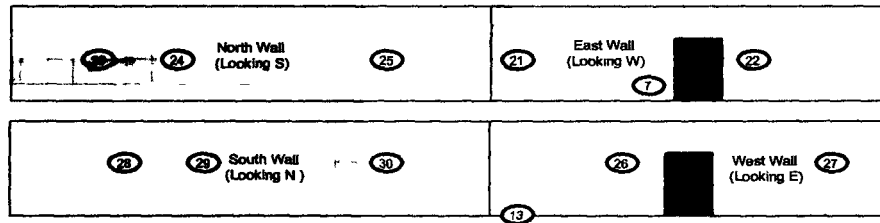
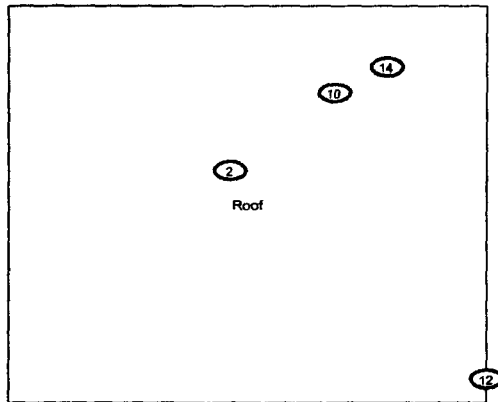
PAGE 1 OF 2

# PRE-DEMOLITION SURVEY

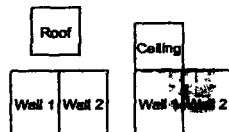
Survey Area A Survey Unit 564-A-001 Type 1  
 Building 564  
 Survey Unit Description Interior & Exterior  
 Total Area 1460 sq m Total Floor Area 259 sq m

## Building 564 (Exterior)

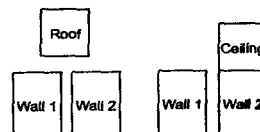
 = Scan Areas







### West Entrance



### East Entrance



<b>SURVEY MAP LEGEND</b>  Sensor & TSA Location  Sensor TSA & Sample Location  Open/Inaccessible Area  Area in Another Survey Unit	Neither the United States Government nor KBR I&E Co. nor DynCorp I&E, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.	N ↑ <b>Scan Survey Information</b> Survey Instrument ID #(s) 9, 10 RCT ID #(s) 2, 3	0 FEET 30 0 METERS 10 1 inch = 24 feet 1 grid sq = 1 sq m.	U.S. Department of Energy Rocky Flats Environmental Technology Site Prepared by GRS Dept. 303-068-770 Prepared for <b>DynCorp</b> THE ART OF TECHNOLOGY MAP ID: R/2001/01-001/000/004-2 September 20, 2001
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564-A-001

PAGE 2 OF 2

56



# ATTACHMENT F

## Chemical Data Summaries and Sample Maps

## Asbestos Data Summary

Sample Number	Material Sampled & Location	Analysis Results
<b>Building 562</b>		
56210102001-214-001	Yellow fibrous material with white covering on 3 inch domestic water line, NW corner	None Detected
56210102001-214-002	Yellow fibrous material with white covering on 3 inch domestic water line at the eyewash	None Detected
56210102001-214-003	Yellow fibrous material with white covering on 3 inch domestic water line above the eyewash	None Detected
56210102001-214-004	Yellow fibrous material with white covering on 3 inch fire protection line in the NE corner	None Detected
56210102001-214-005	Yellow fibrous material with white covering on 3 inch fire protection line @ 562-fps-1	None Detected
56210102001-214-006	Yellow fibrous material with white covering on 3 inch fire protection line, west wall	None Detected
56210102001-214-007	White resin TSI on the generator exhaust line	10% Chrysotile
56210102001-214-008	White resin TSI on the generator exhaust line	10% Amosite
56210102001-214-009	White resin TSI on the generator exhaust line	10% Chrysotile
56210102001-214-010	Tan micaceous surface material at north wall ceiling interface	10% Chrysotile
56210102001-214-011	Tan micaceous surface material at south wall ceiling interface	10% Chrysotile
56210102001-214-012	Tan micaceous surface material at west wall ceiling interface	10% Chrysotile
56210102001-214-013	Mortar painted surface on the north wall	None Detected (Point Count)
56210102001-214-014	Mortar painted surface on the east wall	0.5 Chrysotile (Point Count)
56210102001-214-015	Mortar painted surface on the south wall	0.25 Chrysotile (Point Count)
56210102001-214-016	Frame putty on double door, east side	None Detected (Point Count)
56210102001-214-017	Frame putty on single door, south side	None Detected (Point Count)
56210102001-214-018	Domestic water line elbow at eyewash	None Detected
56210102001-214-019	Domestic water line elbow above eyewash	None Detected (Point Count)
56210102001-214-020	Domestic water line elbow, SW corner	None Detected
56210102001-214-021	Black tar roofing with yellow fibrous material in SW corner	18% Chrysotile
56210102001-214-022	Black tar roofing with yellow fibrous material in NW corner	18% Chrysotile
56210102001-214-023	Black tar roofing with yellow fibrous material in NE corner	18% Chrysotile

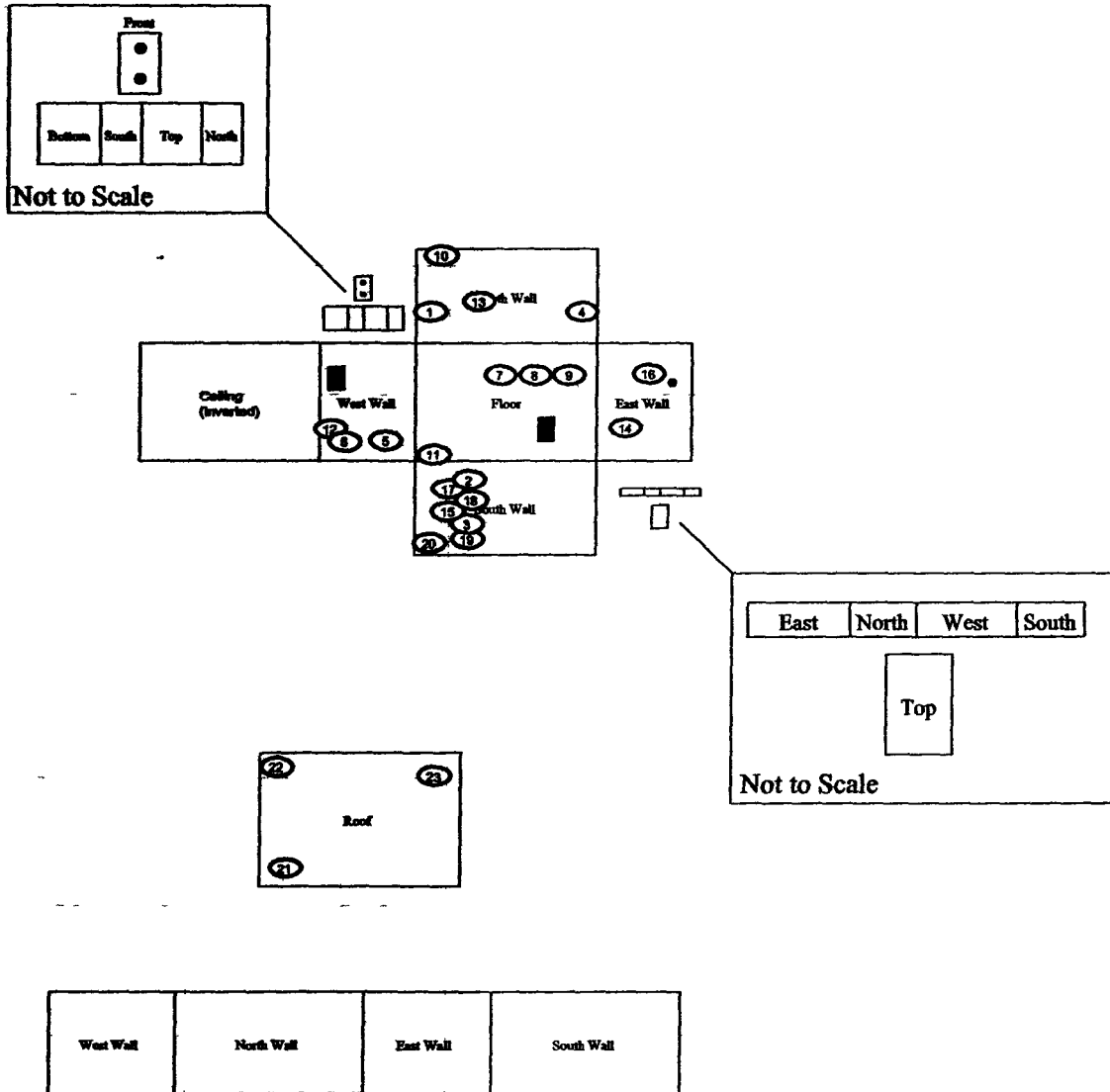
58

Sample Number	Material Sampled & Location	Analysis Results
<b>Building 563</b>		
56310302001-214-001	White resin TSI on 563 Cooling tower, south side, 4 inch line	15% Chrysotile
56310302001-214-002	White resin TSI on 563 Cooling tower, south side, 4 inch line	15% Chrysotile
56310302001-214-003	White resin TSI on 563 Cooling tower, south side, 4 inch line	15% Chrysotile
<b>Building 564</b>		
56410052001-214-001	White fissured (med) ceiling tile at entrance to the womens bathroom	None Detected
56410052001-214-002	White fissured (med) ceiling tile above cube # 17	None Detected
56410052001-214-003	White fissured (small) ceiling tile above cube # 13	None Detected
56410052001-214-004	White fissured (small) ceiling tile above cube # 16	None Detected
56410052001-214-005	Brown cove base with brown mastic at women's room entrance	None Detected
56410052001-214-006	Brown cove base with brown mastic at west entrance, south side	None Detected
56410052001-214-007	Wall board/joint cmpd, men's bathroom, north wall	None Detected
56410052001-214-008	Wall board/joint cmpd, cube # 16, east wall	None Detected
56410052001-214-009	Wall board/joint cmpd, cube # 15, east wall	None Detected
56410052001-214-010	Wall board/joint cmpd, room # 18, west wall	None Detected
56410052001-214-011	Wall board/joint cmpd, utility closet, west wall	None Detected
56410052001-214-012	White with green fissured floor tile with black mastic, men's bathroom	None Detected
56410052001-214-013	White with green fissured floor tile with black mastic, utility room	None Detected
56410052001-214-014	Grey Window caulking outside room 16	None Detected
56410052001-214-015	Grey Window caulking outside room 19	None Detected

# PRE-DEMOLITION SURVEY

Survey Area: A      Survey Unit: 562-A-001      Classification: 3  
 Building: 562  
 Survey Unit Description: Interior & Exterior  
 Total Area: 290 sq. m.      Total Floor Area: 32 sq. m.

## Building 562



Samples numbered  
 56210102001-214-001  
 through  
 56210102001-214-023

<b>SURVEY MAP LEGEND</b> (A) Asbestos Sample Location (B) Beryllium Sample Location (C) Lead Sample Location (D) PCB/CHLORACLA Sample Location (E) PCB Sample Location	Neither the United States Government nor the U.S. Dept. of Energy, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.	0      30 FEET 0      10 METERS 1 inch = 24 feet    1 grad sq. = 1 sq. m.	U.S. Department of Energy Rocky Plate Environmental Technology Site Prepared by: GRS Dept. 983-888-7797 Prepared for: <b>DynCorp</b> THE ART OF TECHNOLOGY MAP ID: 14281/01-001A/Chen/03/September 28, 2001
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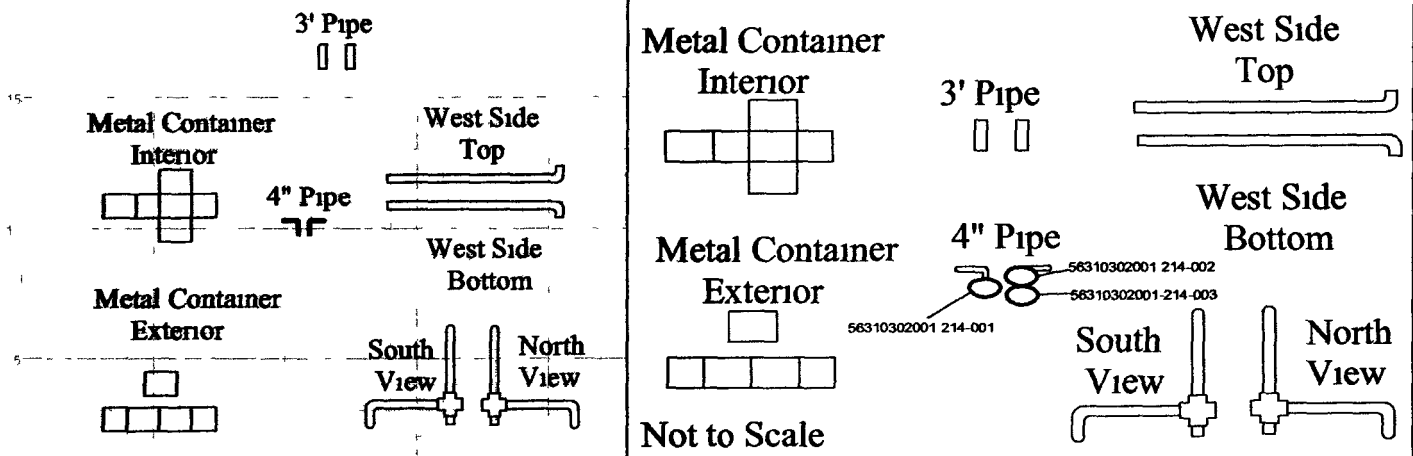
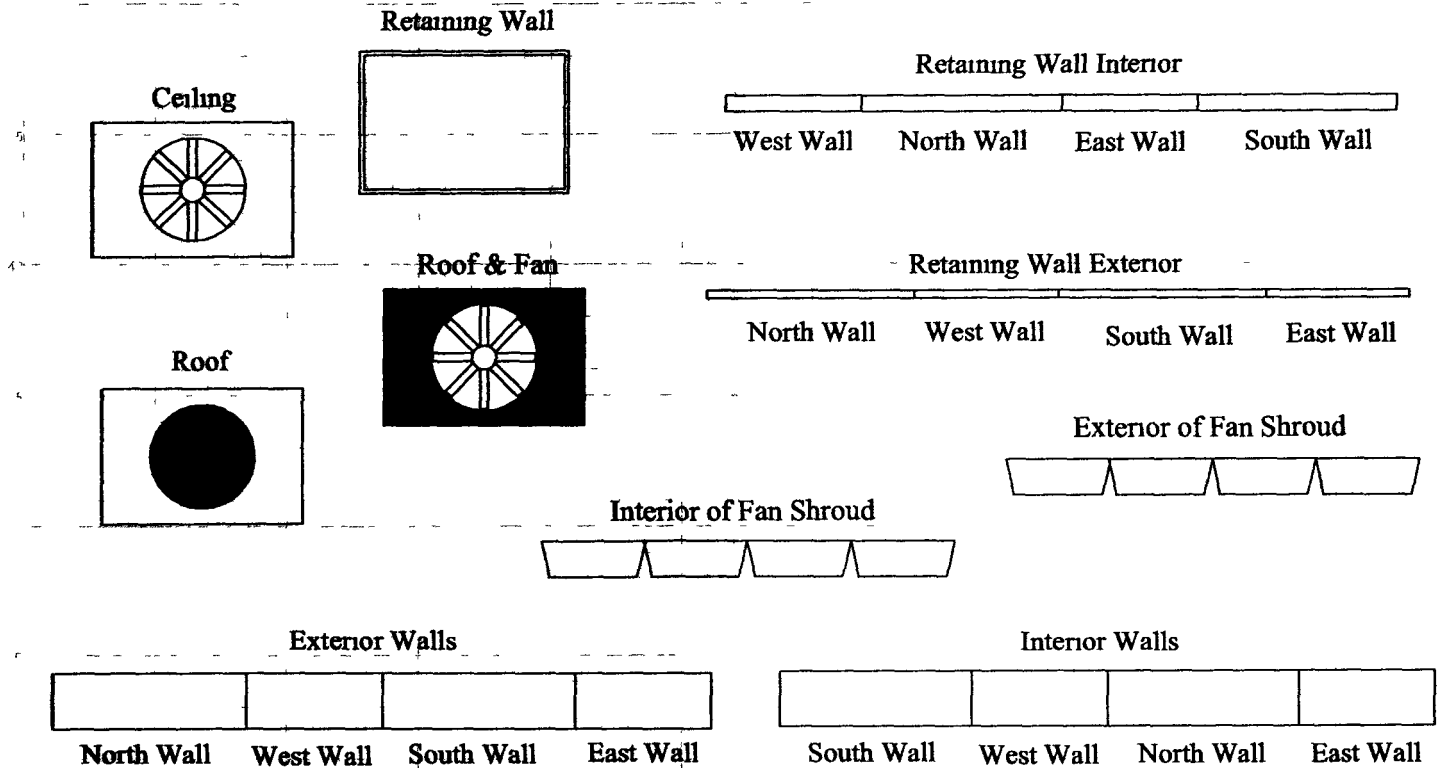
562-A-001

PAGE 1 OF 1

# PRE-DEMOLITION SURVEY

Survey Area A Survey Unit 563-A-001 Type 1  
 Building 563  
 Survey Unit Description Interior & Exterior  
 Total Area 340 sq m Total Floor Area 80 sq m

## 563 Cooling Tower



<b>SURVEY MAP LEGEND</b> <ul style="list-style-type: none"> <li>Asbestos Sample Location</li> <li>Beryllium Sample Location</li> <li>Lead Sample Location</li> <li>RCRA/CERCLA Sample Location</li> <li>PCB Sample Location</li> </ul>	<p>Neither the United States Government nor Enercon, Inc. nor DynCorp LLC, nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe patented or other rights.</p> <p>Open/Inaccessible Area</p> <p>Area in Another Survey Unit</p>	<p>0 30</p> <p>FEET</p> <p>0 10</p> <p>METERS</p> <p>1 inch = 24 feet 1 grid sq = 1 sq m</p>	<p>U.S. Department of Energy              Rocky Flats Environmental Technology Site</p> <p>Prepared by GRS Dept. 303-886-770 Prepared for</p> <p><b>DynCorp</b>              THE ART OF TECHNOLOGY</p> <p>MAP ID: 52001/01-001/002/003 September 17, 2001</p>
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563-A-001

PAGE 1 OF 1

# PRE-DEMOLITION SURVEY

Survey Area: A

Survey Unit: 564-A-001

Classification: 3

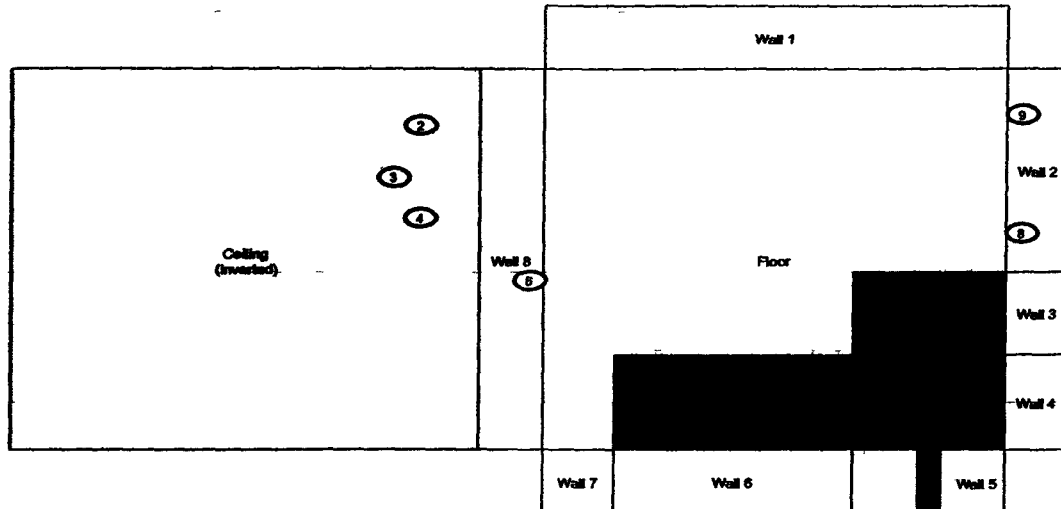
Building: 564

Survey Unit Description: Interior

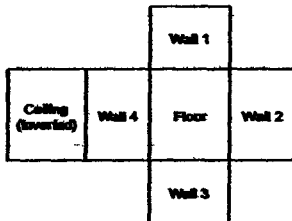
Total Area: 1460 sq. m.

Total Floor Area: 259 sq. m.

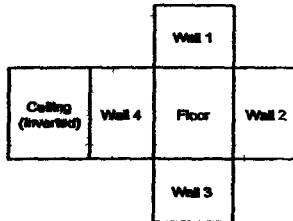
## Building 564 (Interior)



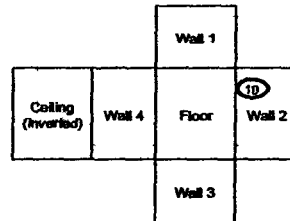
Room 20



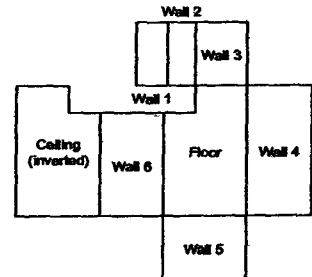
Room 19



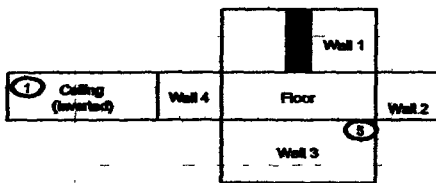
Room 18



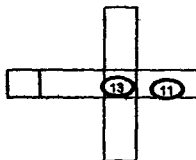
Women's Room



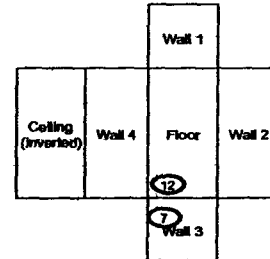
Hallway



Janitor's Closet



Men's Room



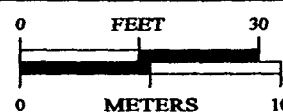
Samples numbered  
56410052001-214-001  
through  
56410052001-214-013

### SURVEY MAP LEGEND

- ⊗ Asbestos Sample Location
- ⚠ Biohazard Sample Location
- Ⓢ Lead Sample Location
- Ⓢ RCRACER/CIA Sample Location
- Ⓢ PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit



1 inch = 24 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: QRS Dept. 360-866-7760/Version 2.0

**DynCorp**  
THE ART OF TECHNOLOGY

MAP ID: 5640101-001A/Rev 2.0/September 28, 2001

564-A-001

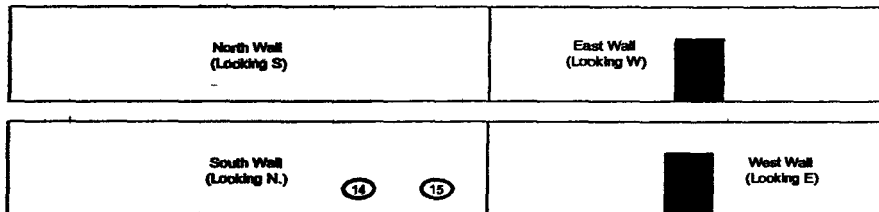
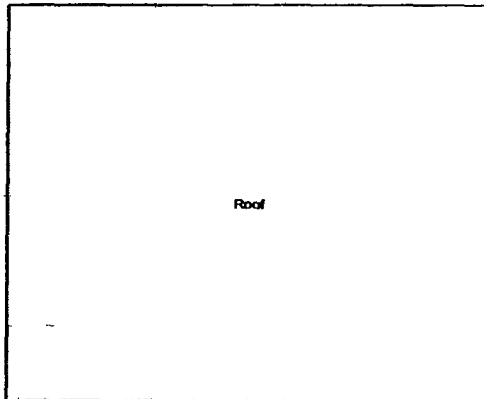
PAGE 1 OF 2

62

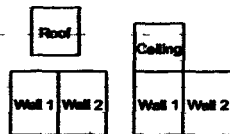
**PRE-DEMOLITION SURVEY**

Survey Area: A      Survey Unit: 564-A-001      Classification: 3  
Building: 564  
Survey Unit Description: Exterior  
Total Area: 1460 sq. m      Total Floor Area: 259 sq. m

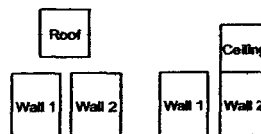
**Building 564**  
(Exterior)



**West Entrance**



**East Entrance**



Sample numbers  
54610052001-214-014  
54610052001-214-015

<b>SURVEY MAP LEGEND</b> ② Asbestos Sample Location ⚠️ Derris/Non Sample Location ② Lead Sample Location Ⓢ RCRA CERCLA Sample Location Ⓢ PCB Sample Location	<small>Under the United States Government seal, DynCorp M&amp;E, nor any agency thereof, nor any of its employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or timeliness of any information, opinions, judgments, or conclusions disclosed, or represents that it has not collected, prepared, or disseminated.</small> ■ Open/Accessible Area ■ Area in Another Survey Unit	<p>0 30 FEET</p> <p>0 10 METERS</p> <p>1 inch = 24 feet 1 grid sq = 1 sq. m</p> <p>N ↑</p>	<p>U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by: GRS Dept. 263-888-7700/Prepared for: <b>DynCorp</b> THE ART OF TECHNOLOGY</p> <p>MAP ID: 1/2881/01-001/000001/September 28, 2001</p>
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564-A-001

PAGE 2 OF 2

63

### Beryllium Data Summary

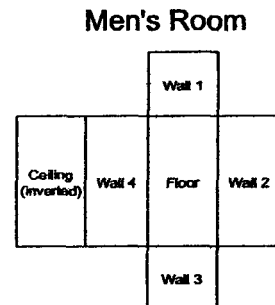
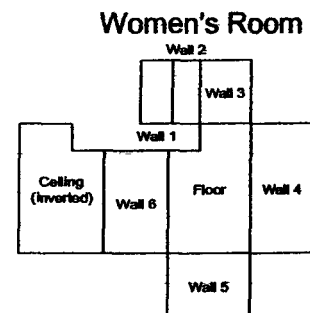
Sample Number	Sample Location	Result ( $\mu\text{g}/100\text{-cm}^2$ )
<b>Building 562</b>		
56210092001-214-001	Top of Egen Electrical Generator, West Side	<0.1
56210092001-214-002	Top of Egen Day Systems Fuel Tank	<0.1
56210092001-214-003	Top of Cabinet Tray, SE Corner	<0.1
56210092001-214-004	Floor, NW Corner	<0.1
56210092001-214-005	Floor at South Entrance	<0.1
56210092001-214-006	Blank	<0.1
<b>Building 564</b>		
56410092001-214-001	Floor, 3 feet inside east entrance,	<0.1
56410092001-214-002	Floor, 3 feet inside west entrance,	<0.1
56410092001-214-003	Top of desk	<0.1
56410092001-214-004	On top of ceiling tile at air louver	<0.1
56410092001-214-005	Above ceiling tile @ air louver, 10 feet from west door	<0.1
56410092001-214-006	Blank	<0.1

64





Survey Area: A      Survey Unit: 564-A-001      Classification: 3  
 Building: 564  
 Survey Unit Description: Interior  
 Total Area: 1460 sq m      Total Floor Area: 259 sq m



<p><b><u>SURVEY MAP LEGEND</u></b></p> <p> <b>Ambient Sample Location</b></p> <p> <b>Downstream Sample Location</b></p> <p> <b>Lead Sample Location</b></p> <p> <b>RCRACIS/CLA Sample Location</b></p> <p> <b>PCB Sample Location</b></p>	<p>Holder the United States Government nor Kalbar Mill Co., nor DynCorp M&amp;E, nor any agency thereof, nor any of their contractors, neither any employee, officer or agent, nor assume any legal liability or responsibility for the accuracy, completeness or usefulness of any information, apparatus, product, or process disclosed, or represents that it has been tested and/or approved for general use.</p> <p> <b>N</b></p>	<p><b>0      FEET      30</b></p> <p><b>0      METERS      10</b></p>	<p style="text-align: center;">U.S. Department of Energy Rocky Flats Environmental Technology Site</p> <p>Prepared by GRS Dept. 263-800-770 Prepared for</p> <p style="text-align: center;"><b><i>DynCorp</i></b> THE ART OF TECHNOLOGY</p>
	<p> <b>Open/Inconformable Area</b></p> <p> <b>Areas in Another Survey Unit</b></p>	<p>1 inch = 24 feet    1 grid sq. = 1 sq. mi.</p>	

## ATTACHMENT G

# Decommissioning Waste Types and Volume Estimates

**Attachment G – Decommissioning Waste Types and Volumes Estimates**

<b>Waste Volume Estimates and Material Types</b>							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
Building 564	1500	50	1000	650	175	0	0
Building 563	300	150	50	0	0	5-friable	Fiberboard - 250
Building 562	1300	0	80	0	0	150-non-friable 100-friable	Built-up Roof - 40

# ATTACHMENT H

## Data Quality Assessment (DQA) Detail

## DATA QUALITY ASSESSMENT (DQA)

### VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium and asbestos).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed, the radiological survey assessment is provided in Table H-1, asbestos in H-2, and beryllium in H-3. A data completeness summary for all results is given in Table H-4.

All relevant Quality records supporting this report are maintained in a Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

No beta/gamma survey designs were implemented for Buildings 562, 563 and 564 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Stated differently, based on the well-established suite of actinides historically used at the RFETS, all of these actinides would emit alpha radiation in exceedance of the applicable transuranic DCGLs before other DCGLs would be exceeded for their respective Uranium species – Technical Basis Document 00162, Rev 0, *Technical Justification for Types of Surveys Performed During Reconnaissance Level Characterization Surveys and Pre-Demolition Surveys in RISS Facilities*, corroborates the use of this approach.

Consistent with EPA's G-4 DQO process, the radiological survey design (for those survey units performed per PDS requirements) was optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

### SUMMARY

In summary, the data presented in this report have been verified and validated relative to quality requirements and the project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable uncertainties. On this basis, the Survey Units and buildings identified in this RLCR (B562, B563 and B564) meet the unrestricted release criteria with the confidences stated herein.

Table H-1 V&V of Radiological Surveys

V&V CRITERIA, RADIOLOGICAL SURVEYS		K-H RSP 16 00 Series MARSSIM (NUREG-1575)	
QUALITY REQUIREMENTS			
Parameters		Measure	frequency
ACCURACY	initial calibrations	90%<x<110%	≥1
	daily source checks	80%<x<120%	≥1/day
	local area background	Field	Typically < 10 dpm
PRECISION	field duplicate measurements for TSA	>5% of real survey points statistical and biased	≥10% of reals
REPRESENTATIVENESS	MARSSIM gridding methodology		NA
	Survey Maps		NA
	Controlling Documents (Characterization Pkg, RSPs)	qualitative	NA
COMPARABILITY	units of measure	dpm/100cm <sup>2</sup>	NA
COMPLETENESS	Plan vs Actual surveys usable results vs unusable	>95% >95%	NA
SENSITIVITY	detection limits	TSA ≤50 dpm/100cm <sup>2</sup> RA ≤10 dpm/100cm <sup>2</sup>	all measures
		MDAs ≤ ½ DCGLw per MARSSIM guidelines	
		Use of standardized engineering units in the reporting of measurement results	
		see Table H-4 for details	
		random and biased measurement locations documented to ± 1m	
		see Attachment C, original Characterization Package (planning document) for field/sampling procedures, thorough documentation of the planning, sampling/analysis process, and data reduction into formats	
		random w/ statistical confidence, biased to improve confidence	
		all local area backgrounds were within expected ranges (i.e., none anomalously high)	
		multi-point calibration through the measurement range encountered in the field	

Table H-2 V&V of Chemical Results-Asbestos

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
ASBESTOS	METHOD: EPA 600/R-93/116	LAB --->	Reservoirs Environmental, Inc	
QUALITY REQUIREMENT		RIN --->	RIN 02D0148 RIN 02D0226 RIN 02D0149	
		Measure	Frequency	
ACCURACY		below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation
PRECISION		all below detectable amounts	≥41 samples	Semi-quantitative, per (microscopic) visual estimation
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact completed paperwork, containers w/ custody seals
	Hold times/preservation	Qualitative	NA	Not applicable
	Controlling Documents (Plans, Procedures, etc )	Qualitative	NA	See Attachment D, for analytical methods, original Characterization Package (planning document) for field/sampling procedures, thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY		% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual samples Usable results vs unusable	Qualitative	NA	See Table H-4, final number of samples at Certified Inspector's discretion
SENSITIVITY	Detection limits	<1% by volume	all measures	



Table H-3 V&V of Chemical Results-Beryllium

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE	
BERYLLIUM	Preparation: NMAM 7300 METHOD. OSHA ID-125G	LAB -->	RFETS B559 Lab
QUALITY REQUIREMENTS		RIN -->	RIN 02D0155 RIN 02D0158
ACCURACY	calibrations	Measure	frequency
		Linear calibration	≥1
	LCS/MS	80% < %R < 120%	≥1
	blanks	80% < %R < 120%	≥1
PRECISION	interference check std (ICP)	<MDL	≥1
	LCSD		NA
	field duplicate	80% < %R < 120% (RPD < 20%)	≥1
	COC	all results < RL	≥1
REPRESENTATIVENESS	hold times/preservation	Qualitative	NA
	maps	Qualitative	NA
	Controlling Documents (Plans, Procedures, etc )		
	measurement units	Qualitative	NA
COMPARABILITY	Plan vs Actual samples	ug/100cm <sup>2</sup>	NA
COMPLETENESS	usable results vs unusable	>95%	NA
SENSITIVITY	detection limits	>95%	NA
		MDL of 0.012 ug/100cm <sup>2</sup>	all measures
		COMMENTS	
		No qualifications significant enough to change project decisions i.e Classification of Type 1 Facility confirmed All results were < 0.1 ug/100cm <sup>2</sup>	

**Table H-4 Data Completeness Summary for Bldgs. 562, 563 and 564**

ANALYTE	# Samples Planned (incl. Media, Real & QC Samples)	# Taken (Real & QC Samples) <sup>a</sup>	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc )
Asbestos <sup>a</sup> Survey Area A	(biased/reals)	(no QC)		40 CFR 763 86, 5 CCR 1001-10, EPA 600/R-93/116
Survey Units • 562-A-001 Bldg 562	23 biased	20 interiors 3 exteriors	ACM present > 1% by volume	RIN 02D0148
• 563-A-001 Bldg 563	3 biased	3 exteriors	ACM present > 1% by volume	RIN 02D0226
• 564-A-001 Bldg 564	15 biased	13 interiors 2 exteriors	No ACM present, all results < 1% by volume	RIN 02D0149
Beryllium (swipes) - Survey Area A	(total, biased, reals)		No contamination found at any location	OSHA ID-125G
Survey Units • 562-A-001 Bldg 562	5 biased (interior)	5 real, 1 blank	Same	RIN 02D0155
• 564-A-001 Bldg 564	5 biased (interior)	5 real, 1 blank	Same	RIN 02D0158
				(No results above action level (0.2 µg/100cm <sup>2</sup> ) or investigative level (0.1 µg/100cm <sup>2</sup> ))

ANALYTE	# Samples Required (incl. Media; Real & QC Samples)	# Taken (Real & QC Samples) <sup>B</sup>	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological - Survey Area A		(real, QC)	No contamination at any location, all values below unrestricted release levels	No results above DCGL <sub>w</sub> or DCGL <sub>EMC</sub> action level (20 dpm/100cm <sup>2</sup> removable, 100 dpm/100cm <sup>2</sup> average, and 300 dpm/100cm <sup>2</sup> maximum
Survey Units- • 562-A-001 Bldg 562	30 ± TSA (15 random & 15 biased) 2 QC TSA 30 ± Smears (15 random & 15 biased)	60 real, 2 QC	Same	
• 563-A-001 Bldg 563	15 ± TSA & 15 ± Smears (random) 2 QC TSA	30 real, 2 QC	Same	
• 564-A-001 Bldg 564	30 ± TSA (15 random & 15 biased) 2 QC TSA 14 (int) 16 (ext) 30 ± Smears (15 random & 15 biased) 14 (int) 16 (ext)	60 real, 2 QC	Same	

<sup>A</sup> # of samples required is estimate only, based on miscellaneous material types, final # of samples at discretion of IH  
<sup>B</sup> int - building interior, ext - building exterior

75/75